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"Wie das Geſtirn,
Ohne Haſt
Aber ohne Raſt,
Drehe ſich jeder
Um die eigene Laſt."

GOETHE.

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TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

VOLUME 31.

FOR THE YEAR 1906.

PHILADELPHIA:
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1906.

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J. RIDDLE GOFFE, M.D., *Secretary*,
No. 616 MADISON AVENUE, NEW YORK.

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OFFICERS AND FELLOWS

OF THE

AMERICAN GYNECOLOGICAL SOCIETY,

1906.

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OFFICERS FOR 1906.[1]

PRESIDENT.

RICHARD B. MAURY, MEMPHIS.

VICE-PRESIDENTS.

HOWARD A. KELLY, BALTIMORE.
REUBEN PETERSON, ANN ARBOR.

SECRETARY.

J. RIDDLE GOFFE, NEW YORK.

TREASURER.

J. MONTGOMERY BALDY, PHILADELPHIA.

OTHER MEMBERS OF THE COUNCIL.

SETH C. GORDON, PORTLAND.
[To serve one year.]

JOSEPH E. JANVRIN, NEW YORK.
[To serve two years.]

EDWARD REYNOLDS, BOSTON.
[To serve three years.]

EMILIUS CLARK DUDLEY, CHICAGO.
[To serve four years.]

[1] Officers for the ensuing year may be found in the minutes of the meeting page xxxvi.

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LIST OF OFFICERS

FROM THE ORGANIZATION TO THE PRESENT TIME.

---

* Deceased.

	President.	*Vice-Presidents.*	*Secretary.*	*Treasurer.*
1876.	*Fordyce Barker.	*Washington L. Atlee, *William H. Byford.	*James R. Chadwick.	*Paul F. Mundé.
1877.	*Fordyce Barker.	*Washington L. Atlee, *William H. Byford.	*James R. Chadwick.	*Paul F. Mundé.
1878.	*Edmund R. Peaslee.	*William Goodell, *Isaac E. Taylor.	*James R. Chadwick.	*Paul F. Mundé.
1879.	*T. Gaillard Thomas.	*D. Humphreys Storer, *Henry P. C. Wilson.	*James R. Chadwick.	*Paul F. Mundé.
1880.	*J. Marion Sims.	W. T. Howard, *Robert Battey.	*James R. Chadwick.	*Paul F. Mundé.
1881.	*W. H. Byford.	T. A. Reamy, *H. F. Campbell.	*James R. Chadwick.	*Paul F. Mundé.
1882.	Thomas Addis Emmet.	*George H. Lyman, *Emil Noeggerath.	*James R. Chadwick.	*Paul F. Mundé.
1883.	*Gilman Kimball.	*Albert H. Smith, *Theophilus Parvin.	Frank P. Foster.	*Paul F. Mundé.
1884.	*Albert H. Smith.	*James R. Chadwick, *Samuel C. Busey.	Frank P. Foster.	Matthew D. Mann.
1885.	William T. Howard.	Wm. L. Richardson, *Paul F. Mundé.	Frank P. Foster.	Matthew D. Mann.
1886.	Thaddeus A. Reamy.	*Theophilus Parvin, *Geo. J. Engelmann.	Joseph Taber Johnson.	Matthew D. Mann.
1887.	*Alex. J. C. Skene.	John C. Reeve, *Ellwood Wilson.	Joseph Taber Johnson.	Matthew D. Mann.
1888.	*Robert Battey.	*A. Reeves Jackson, *James R. Chadwick.	Joseph Taber Johnson.	Matthew D. Mann.
1889.	*Henry P. C. Wilson.	*William T. Lusk, *Edward W. Jenks.	Joseph Taber Johnson.	Matthew D. Mann.
1890.	John P. Reynolds.	William M. Polk, Ely Van de Warker.	Joseph Taber Johnson.	Matthew D. Mann.
1891.	*A. Reeves Jackson.	Joseph Taber Johnson, William H. Baker.	Henry Clark Coe.	Matthew D. Mann.
1892.	*John Byrne.	Richard B. Maury, *Cornelius Kollock.	Henry Clark Coe.	Matthew D. Mann.

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	President.	*Vice-Presidents.*	*Secretary.*	*Treasurer*
1893.	*Theophilus Parvin.	William H. Parish, William H. Baker.	Henry Clark Coe.	Matthew D. Mann.
1894.	*William T. Lusk.	*Samuel C. Busey, Bache McR. Emmet.	Henry Clark Coe.	Matthew D. Mann.
1895.	Matthew D. Mann.	*Geo. J. Engelmann, Clement Cleveland.	Henry Clark Coe.	J. Montgomery Baldy.
1896.	William M. Polk.	*James H. Etheridge, Fernand Henrotin.	Henry Clark Coe.	J. Montgomery Baldy.
1897.	*James R. Chadwick.	*R. Stansbury Sutton, Henry J. Garrigues.	J. Riddle Goffe.	J. Montgomery Baldy.
1898.	*Paul F. Mundé.	Emilius C. Dudley, *Arthur W. Johnstone.	J. Riddle Goffe.	J. Montgomery Baldy.
1899.	Joseph Taber Johnson.	Howard A. Kelly, A. F. A. King.	J. Riddle Goffe.	J. Montgomery Baldy.
1900.	*George J. Engelmann.	Edward L. Duer, Seth C. Gordon.	J. Riddle Goffe.	J. Montgomery Baldy.
1901.	Ely Van de Warker.	Charles Jewett, Richard B. Maury.	J. Riddle Goffe.	J. Montgomery Baldy.
1902.	Seth C. Gordon.	George M. Edebohls, Edward Reynolds.	J. Riddle Goffe.	J. Montgomery Baldy.
1903.	Joseph E. Janvrin.	*Edward W. Jenks, *A. Palmer Dudley.	J. Riddle Goffe.	J. Montgomery Baldy.
1904.	Edward Reynolds.	J. Whitridge Williams, Edward P. Davis.	J. Riddle Goffe.	J. Montgomery Baldy.
1905.	E. Clark Dudley.	Henry D. Fry, Henry C. Coe.	J. Riddle Goffe.	J. Montgomery Baldy.
1906.	Richard B. Maury.	Howard A. Kelly, Reuben Peterson.	J. Riddle Goffe,	J. Montgomery Baldy.

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HONORARY FELLOWS.

ELECTED

1884. GEORGE GRANVILLE BANTOCK, M.D., 14 Upper Hamilton Terrace, N. W., London, England.
1876. ROBERT BARNES, M.D., Bernersmede, Eastbourne, England.
1878. JOHN S. BILLINGS, M.D., LL.D., New York Public Library, 40 Lafayette Place, New York.
1893. CHARLES J. CULLINGWORTH, M.D., 14 Manchester Square, W., London, England.
1878. J. AMÉDÉE DOLÉRIS, M.D., Paris, France.
1902. THOMAS ADDIS EMMET, M.D., 93 Madison Ave., New York. *Founder.*
1905. WILLIAM GARDNER, M.D., 109 Union Ave., Montreal, Canada.
1901. HENRY J. GARRIGUES, M.D., 210 West 4th St., New York.
1899. D. BERRY HART, M.D., 29 Charlotte Square, Edinburgh, Scotland.
1902. WILLIAM T. HOWARD, M.D., 804 Madison Ave., Baltimore, Md., *Founder.*
1895. CHARLES JACOBS, M.D., 53 Boulevard de Waterloo, Brussels, Belgium.
1891. CHRISTIAN G. LEOPOLD, M.D., 25 Seminar St., Dresden, Germany.
1888. AUGUST MARTIN, M.D., Greifswald, Germany, Wallenburth, 73.
1892. OTTAVIO MORISANI, M.D., Naples, Italy.
1891. ROBERT OLSHAUSEN, M.D., N. Artillerie St., 19, Berlin, Germany.
1901. KARL PAWLIK, M.D., Spálená Ulice 3ª, Prague.
1891. SAMUEL POZZI, M.D., 47 Avenue d'Jena, Paris, France.
1897. JOHN C. REEVE, M.D., LL.D., Dayton, Ohio. *Founder.*
1903. WILLIAM L. RICHARDSON, M.D., 225 Commonwealth Ave., Boston. *Founder.*
1896. PAUL SÉGOND, M.D., 11 Quai d'Orsey, Paris, France.
1888. ALEXANDER R. SIMPSON, M.D., 52 Queen St., Edinburgh, Scotland.
1901. TH. TUFFIER, M.D., 42 Avenue Gabriel, Paris, France.
1881. FRANZ VON WINCKEL, M.D., Sonenstrasse 16ª, Munich, Germany.

Total, twenty-three Honorary Fellows.

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DECEASED FELLOWS.

ELECTED

1877. JOHN L. ATLEE, M.D., Lancaster, Pa.
1892. ROBERT BATTEY, M.D., Rome, Georgia. *Founder.*
1897. SAMUEL C. BUSEY, M.D. LL.D., Washington, D. C. *Founder.*
1890. HENRY F. CAMPBELL, M.D., Augusta, Georgia. *Founder.*
1895. JAMES R. CHADWICK, A.M, M.D., Boston. *Founder.*
1889. M. CHARPENTIER, M.D., Paris, France.
1877. JOHN C. DALTON, M.D., New York.
1877. J. A. H. DEPAUL, M.D., Paris, France.
1878. J. MATTHEWS DUNCAN, M.D., London, England.
1888. ALEXANDER DUNLAP, M.D., Springfield, Ohio.
1876. JOSEPH A. EVE, M.D., Augusta, Georgia.
1889. ROBERT P. HARRIS, M.D., Philadelphia.
1888. GRAILY HEWITT, M.D., London, England.
1881. J. BRAXTON HICKS, M.D., London, England.
1876. THOMAS KEITH, M.D., London, England.
1888. GILMAN KIMBALL, M.D., Lowell, Massachusetts.
1876. ALFRED H. M'CLINTOCK, M.D., Dublin, Ireland.
1888. EMIL NOEGGERATH, M.D., Wiesbaden, Germany. *Founder.*
1877. CHARLES PAJOT, M.D., Paris, France.
1885. W. S. PLAYFAIR, London, England.
1888. SIR WILLIAM O. PRIESTLEY, M.D., LL.D., London, England.
1901. M. SAENGER, M.D., Prague.
1877. F. W. VON SCANZONI, M.D., Würzburg, Bavaria.
1876. CARL SCHROEDER, M.D., Berlin, Germany.
1876. GUSTAV SIMON, M.D., Heidelberg, Germany.
1888. D. HUMPHREYS STORER, M.D., Boston. *Founder.*
1905. R. STANSBURY SUTTON, Pittsburg, Pa.
1882. LAWSON TAIT, ESQ., Birmingham, England.
1881. S. TARNIER, M.D., Paris, France.
1888. ISAAC E. TAYLOR, M.D., New York. *Founder.*
1893. T. GAILLARD THOMAS, New York. *Founder*
1882. J. KNOWSLEY THORNTON, ESQ., London, England.
1886. SIR SPENCER WELLS, BART., London, England.
1876. MARMADUKE B. WRIGHT, M.D., Cincinnati.

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ACTIVE FELLOWS.

* Denotes Fellows who are deceased.
† Denotes Fellows who have resigned.

1906.—ANDREWS, FRANK T., M.D., Professor of Clinical Gynecology, Northwestern University Medical School; Gynecologist to Marcy and Wesley Hospitals and South Side Dispensary. 100 State Street, Chicago.

1888.—ASHBY, THOMAS A., M.D., Professor of Diseases of Women, Baltimore Medical College; Professor of Obstetrics and Clinical Gynecology, Woman's Medical College, of Baltimore; Consulting Gynecologist to Home for Incurables; Obstetrician and Gynecologist to Good Samaritan Hospital; Gynecologist to Maryland General Hospital; President of Medical and Chirurgical Society of Maryland. 1125 Madison Avenue, Baltimore.

1895.—ASHTON, WILLIAM EASTERLY, M.D. Professor of Gynecology, Medico-Chirurgical College of Philadelphia; Gynecologist to Medico-Chirurgical and Philadelphia Hospitals. 2011 Walnut Street, Philadelphia.

Founder.—*ATLEE, WASHINGTON L., M.D. Made Honorary Fellow 1877.

1886.—BAER, B. F., M.D. Ex-President of Philadelphia Obstetrical Society; Professor of Gynecology, Philadelphia Polyclinic. *Council*, 1895. 1618 Summer Street, Philadelphia.

1882.—BAKER, WILLIAM H., M.D. Formerly Professor of Gynecology, Harvard University; Surgeon to the Free Hospital for Women. *Council*, 1887, 1890. *Vice-President*, 1891, 1893. 22 Mount Vernon Street, Boston.

1889.—BALDY, J. MONTGOMERY, M.D. Professor of Gynecology, Philadelphia Polyclinic; Surgeon to the Gynecean Hospital; Consulting Surgeon to the Jewish and the Frederick Douglas Hospitals. *Treasurer*, 1894–1907. 2219 De Lancey Place, Philadelphia, Pa.

Founder.—*BARKER, FORDYCE, M.D., LL.D. 1891.

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Founder.—*Battey, Robert, M.D. Made Honorary Fellow 1892.

Founder.—*Bixby, George H., M.D. 1889.

1896.—Boise, Eugene, A.B., M.D. Gynecologist to Butterworth Hospital. Grand Rapids, Michigan.

1888.—Boldt, Hermann J., M.D. Gynecologist to the German Poliklinik; Gynecologist to St. Mark's Hospital; Consulting Gynecologist to the Beth Israel Hospital; Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital; Fellow of the British and International Gynecological Societies. 39 East Sixty-first Street, New York.

1897.—Bovée, J. Wesley, M.D. Professor of Gynecology George Washington University; Gynecologist to Columbia, Providence, and George Washington University Hospitals, and St. Elizabeth Hospital for the Insane; Consulting Physician to St. Ann's Infant Asylum. The Rochambeau, Connecticut Avenue and H Street, Washington, D. C.

1878.—†Bozeman, Nathan, M.D. 1886.

1905.—Broun, Le Roy, A.B., M.D., Assistant Surgeon to Woman's Hospital in the State of New York; Surgeon to Manhattan State Hospital West (Insane Asylum). 70 West Eighty-second Street, New York.

1881.—Browne, B. Bernard, M.D. Professor of Diseases of Women and Clinical Midwifery, Woman's Medical College of Baltimore; Gynecologist to the Good Samaritan Hospital; Consulting Gynecologist to the Hospital for Consumptives. *Council*, 1886, 1893. 510 Park Avenue, Baltimore.

Founder.—*Buckingham, Charles E., M.D. 1877.

1894.—Buckmaster, Augustus H., M.D. Professor of Gynecology and Obstetrics, University of Virginia. Charlottesville, Virginia.

1898.—Burrage, Walter L., A.M., M.D. Gynecologist to St. Elizabeth's and the Carney Hospitals; Surgeon to Outpatients, Free Hospital for Women. 282 Newbury Street, Boston.

Founder.—*Busey, Samuel C., M.D., LL.D. 1901.

1889.—Byford, Henry T., M.D. Professor of Gynecology, College of Physicians and Surgeons (University of Illinois) of Chicago; Professor of Clinical Gynecology, Northwestern University Woman's Medical School; Professor of Gynecology,

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Chicago Post-Graduate Medical School; Professor of Gynecology, Chicago Clinical School; Surgeon to the Woman's Hospital; Gynecologist to the Chicago West Side Hospital. Reliance Building, 100 State Street, Chicago.

Founder.—*Byford, William H., M.D., LL.D. 1890.

Founder.—*Byrne, John, M.D., M.R.C.S.E. 1902.

Founder.—*Campbell, Henry F., M.D. Made Honorary Fellow, 1890.

Founder.—*Chadwick, James R., A.M., M.D. Made Honorary Fellow, 1905.

1903.—Chipman, Walter William, M.D. Lecturer in Gynecology, McGill University; Assistant Gynecologist to Royal Victoria Hospital. 287 Mountain Street, Montreal, Canada.

1903.—Clark, John G., M.D. Professor of Gynecology, University of Pennsylvania; Gynecologist to University and St. Agnes' Hospitals; Consulting Gynecologist to Woman's and Bryn Mawr Hospitals. 218 South Fifteenth Street, Philadelphia.

1889.—Cleveland, Clement, A.M., M.D. Surgeon to the Woman's Hospital in the State of New York; Consulting Gynecologist to General Memorial Hospital. *Council*, 1894. *Vice-President*, 1895. 59 West Thirty-eighth Street, N. Y.

1888.—Coe, Henry C., A.M., M.D., M.R.C.S. Gynecologist to Bellevue and General Memorial Hospitals; Consulting Gynecologist to the New York Foundling Hospital; Professor of Gynecology in the University and Bellevue Hospital Medical College. *Secretary*, 1891–96. *Vice-President*, 1905. 8 West Seventy-sixth Street, New York.

1888.—*Coleman, John Scott, M.D. 1892.

1896.—Cragin, Edwin B., A.B., M.D. Professor of Obstetrics, and of Gynecology, College of Physicians and Surgeons, N. Y.; Attending Physician to the Sloane Maternity Hospital; Consulting Obstetric Surgeon to the City Maternity Hospital and the New York Infant Asylum; Consulting Gynecologist to the New York Infirmary for Women and Children. 10 West Fiftieth Street, New York.

1904.—Cullen, Thomas S., M.B. Associate Professor of Gynecology, Johns Hopkins University; Associate Gynecologist, Johns Hopkins Hospital; Consulting Gynecologist Church Home and Infirmary. 3 West Preston Street, Baltimore.

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1889.—CURRIER, ANDREW F., A.B., M.D. Gynecologist to the Skin and Cancer Hospital; Consulting Gynecologist to McDonough Memorial Hospital, New York, and Ossining Hospital, Sing Sing, N. Y., and Mt. Vernon Hospital, Mt. Vernon, N. Y. 173 East Lincoln Avenue, Mount Vernon, New York.

1893.—CUSHING, ERNEST W., A.B., M.D. Surgeon to Woman's Charity Club Hospital. 168 Newbury Street, Boston.

1889.—DAVENPORT, FRANCIS H., A.B., M.D. Assistant Professor of Gynecology, Harvard University; Assistant Surgeon to the Free Hospital for Women; Physician to the Department of Diseases of Women, Boston Dispensary. *Council*, 1891. 419 Boylston Street, Boston.

1891.—DAVIS, EDWARD P., A.M., M.D. Professor of Obstetrics, Jefferson Medical College; Professor of Obstetrics and Diseases of Infancy, Philadelphia Polyclinic; Visiting Obstetrician to the Jefferson, Philadelphia, and Polyclinic Hospitals; Clinical Professor of Pediatrics, Woman's Medical College. *Council*, 1896, 1899. *Vice-President*, 1904. 250 South Twenty-first Street, Philadelphia.

1892.—DICKINSON, ROBERT L., M.D. Surgeon (Gynecologist) to Brooklyn Hospital; Obstetrician to Kings County Hospital; Instructor in Obstetrics and Assistant Obstetrician, Long Island College Hospital. 168 Clinton Street, Brooklyn, N. Y.

Founder.—*DRYSDALE, THOMAS M., A.M., M.D. 1904.

1889.—*DUDLEY, A. PALMER, M.D. 1905.

1886.—DUDLEY, EMILIUS CLARK, A.B., M.D. Professor of Gynecology, Chicago Medical College; Fellow of the British Gynecological Society. *Council*, 1891, 1893. *Vice-President*, 1898. 1619 Indiana Avenue, Chicago.

1879.—DUER, EDWARD L., A.M., M.D. Gynecologist to the Presbyterian Hospital; Visiting Obstetrician to Preston Retreat; Consulting Obstetrician to Philadelphia Maternity, etc. *Vice-President*, 1899. 1606 Locust Street, Philadelphia.

1891.—EDEBOHLS, GEORGE M., A.M., M.D. Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital; Gynecologist to St. Francis' Hospital. *Council*, 1896. 59 West Forty-ninth Street, New York.

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1893.—EDGAR, JAMES CLIFTON, Ph.B., A.M., M.D. Professor of Obstetrics, Cornell University Medical College of New York; Obstetric Surgeon to the Mothers' and Babies' Hospital; Obstetrician to the Emergency Lying-in Hospital. 50 East Thirty-fourth Street, New York.

1887.—EMMET, BACHE McE., M.D. Professor of Gynecology, New York Post-Graduate Medical School and Hospital; Surgeon to the Woman's Hospital in the State of New York. *Vice-President*, 1894. 18 East Thirtieth Street, New York.

1895.—EMMET, JOHN DUNCAN, M.D. Gynecologist to St. Vincent's Hospital. 91 Madison Avenue, New York.

Founder.—EMMET, THOMAS ADDIS, M.D., LL.D. Made Honorary Fellow 1902.

Founder.—*ENGELMANN, GEORGE J., A.M., M.D. 1903.

1890.—*ETHERIDGE, JAMES H., A.M., M.D. 1899.

1904.—FINDLEY, PALMER, B.S., M.D. Professor of Gynecology, College of Medicine, University of Nebraska. 3602 Lincoln Boulevard, Omaha, Neb.

1889.—FORD, WILLIS E., A.M., M.D. Medical Director, St. Luke's Hospital; Professor of Electro-Therapeutics, University of Buffalo; Lecturer on Electro-Therapeutics, New York University and Bellevue Medical School. *Council*, 1893. 266 Genesee Street, Utica, N. Y.

1881.—†FOSTER, FRANK P., M.D. 1895.

1902.—FREDERICK, CARLTON C., B.S., M.D. Professor of Clinical Gynecology, University of Buffalo; Surgeon-in-Chief Buffalo Woman's Hospital. 64 Richmond Ave., Buffalo, N. Y.

1890.—FRY, HENRY D., M.D. Professor of Obstetrics, Medical Department of Georgetown University. 1133 Fourteenth Street, N. W., Washington, D. C.

1888.—GEHRUNG, EUGENE C., M.D. President and Chief of the Gynecological Department of the South Side Dispensary; Consulting Gynecologist of the Missouri Baptist Sanitarium; Corresponding Member of Société Obstétricale et Gynécologique de Paris; Membre Titulaire de la Société Francaise d'Electrothérapie. "The Beers," St. Louis, Mo.

1904.—GELLHORN, GEORGE, M.D. Gynecologist to St. Luke's Hospital; Consulting Gynecologist to City Insane Asylum. 32 Linmar Building, St. Louis, Missouri.

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1881.—†Gillette, Walter R., M.D. 1889.

1891.—Goffe, J. Riddle, Ph.M., M.D. Professor of Gynecology New York Polyclinic Medical School and Hospital and Dartmouth Medical College; Attending Gynecologist to the Woman's Hospital in the State of New York and New York City Hospital; Consulting Gynecologist to St. Joseph's Hospital, Yonkers, N. Y., and to Mt. Vernon Hospital, Mt. Vernon, N. Y. *Council*, 1896. *Secretary*, 1897–1907. 616 Madison Avenue, New York.

Founder.—*Goodell, William, A.M., M.D., LL.D. 1895.

1877.—†Goodman, John, M.D. 1892.

1888.—Gordon, Seth C., M.D., LL.D. Lecturer on Diseases of Women, Portland School of Medical Instruction; Surgeon to the Maine General Hospital; Consulting Surgeon to the Maine Eye and Ear Infirmary; President of the Maine Academy of Medicine and Science; Ex-President of the Maine Medical Association; Ex-President of the Section of Obstetrics and Gynecology of the American Medical Association; Fellow of the British Gynecological Society. *Council*, 1892. *President*, 1902. Portland, Maine.

1890.—Grandin, Egbert H., M.D. Consulting Gynecologist to the French Hospital; Attending Gynecologist to Columbus Hospital. 116 West Seventy-sixth Street, New York.

1886.—Green, Charles M., A.B., M.D. Professor of Obstetrics and Clinical Gynecology, Harvard University; Obstetric Physician to the Boston Dispensary; Senior Visiting Physician for Diseases of Women, Boston City Hospital; Assistant Visiting Physician to the Boston Lying-in Hospital. *Council*, 1895, 1899. 78 Marlborough Street, Boston.

1887.—*Hanks, Horace Tracy, M.D., LL.D. 1900.

1895.—Harris, Philander A., M.D. Gynecologist to the Paterson General Hospital and to Passaic General Hospital; Corresponding Member of the Obstetrical and Gynecological Society of Paris, France (1885). 26 Church Street, Paterson, N. J.

1894.—Harrison, George T., A.M., M.D. 63 West Fifty-first Street, New York.

1894.—Henrotin, Fernand, M.D. Professor of Gynecology, Chicago Polyclinic; Senior Surgeon to the Alexian Brothers' Hospital; Ex-President of the Chicago Gynecological Society; Consulting Gynecologist to St. Joseph's Hos-

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pital; Corresponding Member of the Belgian Gynecological Society. 353 La Salle Avenue, Chicago.

1891.—HIRST, BARTON COOKE, M.D. Professor of Obstetrics, University of Pennsylvania; Obstetrician to the University and Maternity Hospitals; Visiting Obstetrician to the Preston Retreat; Gynecologist to the Howard Hospital and to the Southeastern Hospital for Women and Children; Consulting Obstetrician to the Lying-in Charity. 1821 Spruce Street, Philadelphia.

1892.—*HOLMES, HORATIO R., M.D. 1896.

Founder.—HOWARD, WILLIAM T., M.D. Made Honorary Fellow 1902.

1885.—*HUNTER, JAMES B., M.D. 1889.

1891.—INGALLS, PHINEAS H., A.M., M.D. Gynecologist to the Hartford Hospital. 112 High Street, Hartford, Conn.

Founder.—†INGHAM, JAMES V., M.D. 1889.

1877.—*JACKSON, A. REEVES, A.M., M.D. 1892.

1889.—*JAGGARD, W. W., M.D. 1896.

1886.—JANVRIN, JOSEPH E., M.D. President of the New York Obstetrical Society (1889–1891); Consulting Surgeon to St. Elizabeth's Hospital. *Council*, 1889, 1892. *President*, 1903. 191 Madison Avenue, New York.

1895.—JARMAN, GEORGE W., A.M., M.D. Gynecologist to the General Memorial Hospital; Obstetric Surgeon to the New York Maternity Hospital; Instructor in Gynecology, College of Physicians and Surgeons; Chief of Clinic, Department of Diseases of Women, Vanderbilt Clinic. 54 West Seventy-sixth Street, New York.

Founder.—*JENKS, EDWARD W., M.D., LL.D. 1903.

1885.—JEWETT, CHARLES, A.M., M.D. Professor of Gynecology and Obstetrics, Long Island College Hospital, Brooklyn; Attending Physician to Long Island College Hospital; Physician-in-Chief to Department of Children's Diseases, St. Mary's Hospital, Brooklyn; Consulting Obstetrician to Kings County Hospital; Fellow of the British Gynecological Society. *Council*, 1895, 1897. 330 Clinton Avenue, Brooklyn.

Founder.—JOHNSON, JOSEPH TABER, A.M., Ph.D., M.D. Professor of Gynecology, University of Georgetown; Gynecologist to the Providence Hospital; President of the Woman's Dispensary; President of the Medical Society of the District of Columbia (1887); Member of the British Medical Association;

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Fellow of the British Gynecological Society; President of the Washington Obstetrical and Gynecological Society. *Secretary*, 1886–90. *Vice-President*, 1891. *Council*, 1881 1885, 1897. *President*, 1899. 926 Farragut Square, Washington, D. C.

1886.—*Johnstone, Arthur W., A.M., M.D. 1905.

1892.—*Keating, John M., M.D., LL.D. 1893.

1887.—Kelly, Howard A., M.D. Professor of Gynecology and Obstetrics in Johns Hopkins University; Gynecologist and Obstetrician to the Johns Hopkins Hospital; Consulting Surgeon to the Kensington Hospital for Women, Philadelphia. *Vice-President*, 1899. 1418 Eutaw Place, Baltimore, Md.

1886.—King, Albert F. A., A.M., M.D. Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, and in the University of Vermont; President of the Washington Obstetrical and Gynecological Society (1885–87); Fellow of the British Gynecological Society; Consulting Physician to the Children's Hospital, Washington; Consulting Physician to the Woman's Dispensary. *Council*, 1898. *Vice-President*, 1899. 1315 Massachusetts Avenue, N. W., Washington, D. C.

1892.—Kirkley, Cyrus A., M.D. Toledo, Ohio.

1888.—*Kollock, Cornelius, A.M., M.D. 1897.

1891.—Krug, Florian, M.D. Gynecologist to the Mt. Sinai Hospital. 616 Madison Avenue, New York.

1881.—*Lee, Charles Carroll, A.M., M.D., LL.D. 1893.

Founder.—*Lusk, William T., A.M., M.D., LL.D. 1897.

Founder.—*Lyman, George H., M.D. 1891.

1892.—McLean, Malcolm, M.D. Surgeon to St. Andrew's Infirmary for Women; Consulting Gynecologist to the Randall's Island Hospitals. 31 East One Hundred and Twenty-sixth Street, New York.

1891.—†MacLaren, Archibald, B.S., M.D. 1903.

1892.—MacMonagle, Beverly, M.D. 3522 Clay Street, San Francisco, Cal.

1882.—Mann, Matthew D., A.M., M.D. Professor of Obstetrics and Gynecology, University of Buffalo; Gynecologist and Consulting Obstetrician to the Buffalo General Hospital. *Treasurer*, 1884–95. *President*, 1895. 37 Allen Street, Buffalo, N. Y.

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1901.—MANTON, WALTER PORTER, M.D. Clinical Professor of Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and to the Eastern and Northern Michigan Asylums for the Insane; Consulting Gynecologist to St. Joseph's Retreat; Visiting Obstetrician and Vice-President of Medical Board, Woman's Hospital and Infants' Home; Member of the Committee for the Examination of Midwives, Detroit Board of Health; Fellow of the British Gynecological Society. 32 Adams Avenue, Detroit, Mich.

1883.—MAURY, RICHARD B., M.D. *Council*, 1886, 1888. *Vice-President*, 1892. 111 Court Street, Memphis, Tenn.

1894.—MONTGOMERY, EDWARD E., A.M., M.D. Professor of Clinical Gynecology, Jefferson Medical College; Gynecologist to Jefferson Medical College and to St. Joseph's Hospital; Obstetrician to the Philadelphia Hospital. 1703 Walnut Street, Philadelphia.

1891.—MOSELEY, WILLIAM E., M.D. Professor of Diseases of Women, Baltimore Medical College; Gynecologist to the Maryland General Hospital. *Council*, 1897. 614 North Howard Street, Baltimore, Md.

Founder.—*MUNDÉ, PAUL F., M.D., LL.D. 1902.

1890.—MURRAY, ROBERT A., M.D. 112 West Eightieth Street, New York.

1904. NEWELL, FRANKLIN SPILMAN, A.B., M.D. Outpatient Physician Boston Lying-in Hospital; Assistant Visiting Physician, Department of Gynecology, Boston City Hospital; Assistant in Obstetrics and Gynecology Harvard University. 379 Beacon Street, Boston, Mass.

1894.—NEWMAN, HENRY PARKER, A.M., M.D. Professor of Obstetrics and Clinical Gynecology, College of Physicians and Surgeons of Chicago; Professor of Gynecology, Chicago Post-Graduate Medical School; Surgeon (Department of Diseases of Women) to St. Elizabeth, Post-Graduate, and Chicago Hospitals. 108 State Street, Chicago.

1891.—NOBLE, CHARLES P., M.D. Surgeon to Kensington Hospital for Women; Lecturer on Gynecology, Philadelphia Polyclinic. *Council*, 1899. 1509 Locust Street, Philadelphia.

1902.—NOBLE, GEORGE HENRY, M.D. Gynecologist to Grady Hospital. 131 Pryor Street, Atlanta, Ga.

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Founder.—*NOEGGERATH, EMIL, M.D. Made Honorary Fellow, 1888.

1893.—NORRIS, RICHARD C., A.M., M.D. Lecturer on Clinical and Operative Obstetrics, Medical Department, University of Pennsylvania; Physician-in-Charge, Preston Retreat; Gynecologist to the Methodist Episcopal Hospital and to the Philadelphia Hospital. 500 North Twentieth Street, Philadelphia.

1880.—PALMER, CHAUNCEY D., M.D. Professor of Obstetrics, of the Medical and Surgical Diseases of Women, and of Clinical Gynecology in the Medical College of Ohio; Professor of Gynecology and of Clinical Gynecology in the Woman's State Hospital and Medical College; Obstetrician and Gynecologist to the Cincinnati Hospital. *Council*, 1888. Avondale, Cincinnati, Ohio.

1885.—†PARISH, WILLIAM H., M.D. 1903.

Founder.—*PARVIN, THEOPHILUS, M.D., LL.D. 1898.

Founder.—*PEASLEY, E. RANDOLPH, M.D., LL.D. 1878.

1895.—PENROSE, CHARLES B., A.M., Ph.D., M.D. 1331 Spruce Street, Philadelphia.

Founder.—†PENROSE, RICHARD A. F., A.M., M.D., LL.D. 1885.

1897.—PETERSON, REUBEN, A.B., M.D. Professor of Gynecology and Obstetrics, University of Michigan; Gynecologist and Obstetrician to the University Hospital. Ann Arbor, Mich

1881.—POLK, WILLIAM M., M.D. Professor of Obstetrics and Diseases of Women and Children, Cornell University Medical College; Physician to Bellevue Hospital and to the Emergency Lying-in Hospital; Consulting Gynecologist to St. Luke's and St. Vincent's Hospitals. *Vice-President*, 1890. *Council*, 1891. *President*, 1896. 7 East Thirty-sixth Street, New York.

1892.—*PRYOR, WILLIAM R., M.D. 1904.

1877.—REAMY, THADDEUS A., A.M., M.D., LL.D. Professor of Clinical Gynecology in the Medical College of Ohio; Gynecologist and Obstetrician to the Cincinnati Hospital; Gynecologist to the Good Samaritan Hospital; Surgeon to the Woman's Hospital, Cincinnati; Consulting Gynecologist to Christ's Hospital; Consulting Gynecologist to the Ohio State Hospital for Women; Fellow of the Medico-Chirurgical Society of Philadelphia; Corresponding Member of the Boston

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Gynecological Society. *Vice-President*, 1881. *Council*, 1884. *President*, 1886. Corner May and June Street, Cincinnati.

Founder.—REEVE, JOHN C., M.D., LL.D. Made Honorary Fellow 1897.

1890.—REYNOLDS, EDWARD, M.D. Visiting Surgeon Free Hospital for Women. *Council*, 1894–1896. *Vice-President*, 1902. *President*, 1904. 65 Marlborough Street, Boston.

1887.—†REYNOLDS, JOHN P., M.D. 1896.

Founder.—RICHARDSON, WILLIAM L., M.D. Made Honorary Fellow 1903.

1892.—†RITCHIE, PARK, M.D. 1894.

1896.—ROBB, HUNTER, M.D. Professor of Gynecology, Western Reserve University. 702 Rose Building, Cleveland, Ohio.

1906.—SAMPSON JOHN A., M.D., Lecturer in Gynecology, Albany Medical College; Gynecologist to the Albany Hospital, 180 Washington Avenue, Albany, N. Y.

1879.—*SCOTT, JOHN, M.D., M.R.C.S.I. 1886.

Founder.—*SIMS, J. MARION, M.D., LL.D. 1883.

Founder.—†SINCLAIR, ALEXANDER D., M.D. 1894.

Founder.—*SKENE, ALEXANDER J. C., M.D. 1900.

Founder.—*SMITH, ALBERT H., M.D. 1886.

1892.—SMITH, A. LAPTHORN, A.B., M.D., M.R.C.S. (Eng.). Fellow of the London Obstetrical Society; Fellow of the Société de Médecine Pratique, Paris; Professor of Clinical Gynecology in Bishop's College; Surgeon-in-Chief to Samaritan Free Hospital for Women; Gynecologist and Consulting Surgeon to the Montreal Dispensary; Gynecologist to the Western Hospital. 250 Bishop Street, W., Montreal, Canada.

1905.—SMITH, RICHARD R., M.D. Surgeon to Butterworth Hospital. Grand Rapids, Michigan.

1898.—STONE, ISAAC S., M.D. Clinical Professor of Gynecology, University of Georgetown; Gynecologist to Columbia Hospital for Women; Fellow of British Gynecological Society. Connecticut Ave. and L. St., N. W., Washington, D. C.

1905.—STONE, WILLIAM STEPHEN, A.B., M.D. Instructor in Gynecology, Columbia University; Chief of Clinic, Department of Gynecology, Vanderbilt Clinic. 41 West Seventy-first Street, New York.

Founder.—*STORER, D. HUMPHREYS, M.D. 1903.

1891.—*STRONG, CHARLES P., A.B., M.D. 1893.

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1879.—*Sutton, R. Stansbury, A.M., M.D., LL.D. 1906.

1906.—Taussig, Frederick Joseph, A.B., M.D., Assistant Gynecologist, Washington University; Gynecologist to St. Louis Skin and Cancer Hospital. 2318 Lafayette Street, St. Louis, Mo.

1905.—Taylor, Howard C., Ph.B., M.D. Junior Attending Gynecologist, Roosevelt Hospital; Instructor in Gynecology, Columbia University. 24 West Fiftieth Street, New York.

Founder.—*Taylor, Isaac E., M.D. Made Honorary Fellow 1888.

Founder.—*Thomas, T. Gaillard, M.D. 1903.

1898.—Thompson, John T., A.M., M.D. Professor of Diseases of Women, Bowdoin School for Medical Instruction; Surgeon to the Maine General Hospital. 211 State Street, Portland, Maine.

Founder.—*Trask, James D., M.D. 1883.

1879.—†Underhill, J. W., M.D. 1886.

Founder.—Van de Warker, Ely, M.D. Surgeon to the Central New York Hospital for Women; Surgeon to the Syracuse Woman's and Children's Hospital. *Council*, 1885, 1889, 1896. *Vice-President*, 1889. *President*, 1901. 104 Fayette Park, Syracuse, New York.

1897.—Vineberg, Hiram N., M.D. Attending Gynecologist to St. Mark's Hospital; Gynecologist to Mt. Sinai Hospital Dispensary; Gynecologist to the Montefiore Home for Chronic Invalids. 751 Madison Avenue, New York.

1903.—Wakefield, W. Francis B., M.D. 2161 Sutter Street, San Francisco.

Founder.—*Wallace, Ellerslie, M.D. 1885.

1891.—Wathen, William H., A.M., M.D., LL.D. Professor of Abdominal Surgery and Gynecology in the Kentucky School of Medicine; Ex-President of the Section on Obstetrics and Gynecology of the American Medical Association; Ex-President of the Kentucky State Medical Society; Fellow of the Southern Surgical and Gynecological Society; Gynecologist to the Louisville City Hospital and to the Kentucky School of Medicine Hospital. 628 Fourth Avenue, Louisville, Ky.

1896.—Watkins, Thomas J., M.D. Attending Gynecologist to St. Luke's, Lakeside, and Provident Hospitals, Chicago; Consulting Gynecologist to Silver Cross Hospital, Joliet, Ill.;

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Clinical Instructor in Gynecology, Northwestern University Medical School. 3564 Grand Boulevard, Chicago.

1898. — WEBSTER, J. CLARENCE, B. A., M. D. (Edin.), F.R.C.P.E. Professor of Obstetrics and Gynecology, Rush Medical College, University of Chicago; Fellow of the Royal Society of Edinburgh; Fellow of the Edinburgh Obstetrical Society; Corresponding Member of the Royal Academy of Palermo, Italy, and of the Italian Obstetrical and Gynecological Society. 706 Reliance Building, 100 State Street, Chicago.

1902.—WELLS, BROOKS H., M.D. Professor of Gynecology in the New York Polyclinic Medical School and Hospital. Gynecological Surgeon to St. Vincent's Hospital; Consulting Surgeon to the Brattleboro Memorial Hospital, Brattleboro, Vt. 523 Madison Avenue, New York.

Founder.—*WHITE, JAMES P., M.D. 1881.

1892.—WILLIAMS, J. WHITRIDGE, A.B., M.D. Professor of Obstetrics, Johns Hopkins University; Gynecologist to Union Protestant Infirmary. *Council*, 1899. *Vice-President*, 1904. 1128 Cathedral Street, Baltimore.

1887.—*WILSON, ELWOOD, M.D. 1889.

Founder.—*WILSON, HENRY P. C., M.D. 1898.

1886.—WYLIE, W. GILL, M.D. Professor Emeritus of Gynecology, New York Polyclinic Medical School and Hospital; Gynecologist to Bellevue Hospital; Consulting Surgeon to the Methodist Episcopal Hospital, Brooklyn; Fellow of the British Gynecological Society. 28 West Fortieth Street, New York.

Total, 91 Active Fellows.

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MINUTES OF THE PROCEEDINGS

AT THE

THIRTY-FIRST ANNUAL MEETING

OF THE

AMERICAN GYNECOLOGICAL SOCIETY,

HELD AT HOT SPRINGS,

Virginia,

MAY 22, 23, 24, 1906.

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THIRTY-FIRST ANNUAL MEETING.

HOT SPRINGS, VA., *May* 22, 23, *and* 24, 1906.

The following members were present:

THOMAS A. ASHBY,	Baltimore.
WILLIAM H. BAKER,	Boston.
J. MONTGOMERY BALDY,	Philadelphia.
EUGENE BOISE,	Grand Rapids, Mich.
J. WESLEY BOVEE,	Washington.
LE ROY BROUN,	New York.
B. BERNARD BROWNE,	Baltimore.
AUGUSTUS H. BUCKMASTER,	Charlottesville, Va.
JOHN G. CLARK,	Philadelphia.
CLEMENT CLEVELAND,	New York.
ANDREW F. CURRIER,	Mount Vernon, N. Y.
FRANCIS H. DAVENPORT,	Boston.
EDWARD P. DAVIS,	Philadelphia.
GEORGE M. EDEBOHLS,	New York.
J. CLIFTON EDGAR,	New York.
WILLIS E. FORD,	Utica.
HENRY D. FRY,	Washington.
EUGENE C. GEHRUNG,	St. Louis.
J. RIDDLE GOFFE,	New York.
SETH C. GORDON,	Portland, Me.
PHILANDER A. HARRIS,	Paterson, N. J.
GEORGE TUCKER HARRISON,	New York.
FERNAND HENROTIN,	Chicago.
PHINEAS H. INGALLS,	Hartford.
JOSEPH TABER JOHNSON,	Washington.
HOWARD A. KELLY,	Baltimore.
FLORIAN KRUG,	New York.
MATTHEW D. MANN,	Buffalo.
WALTER P. MANTON,	Detroit.
RICHARD B. MAURY,	Memphis.

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HENRY P. NEWMAN,	Chicago.
CHARLES P. NOBLE,	Philadelphia.
GEORGE H. NOBLE,	Atlanta.
RICHARD C. NORRIS,	Philadelphia.
REUBEN PETERSON,	Ann Arbor.
WILLIAM M. POLK,	New York.
THADDEUS A. REAMY,	Cincinnati.
EDWARD REYNOLDS,	Boston.
RICHARD R. SMITH,	Grand Rapids.
I. S. STONE,	Washington.
W. S. STONE,	New York.
THOMAS J. WATKINS,	Chicago.

FIRST DAY.—*Tuesday, May* 22, 1906.

Morning Session.—The Society met at the Club House of the Homestead Hotel, under the Presidency of Dr. Richard B. Maury, of Memphis, Tennessee, and was called to order at 11 A.M.

The Secretary called the roll.

On motion, Dr. Charles W. Gray, of Portland, Maine, and Professor M. Dührssen, of Berlin, Germany, were made members by invitation.

The Association was welcomed to Hot Springs by Dr. Guy Hinsdale, of Hot Springs, and by Dr. A. H. Buckmaster, of Charlottesville, Virginia.

The addresses of welcome were responded to by Dr. Matthew D. Mann, of Buffalo, in behalf of the Society.

Papers were read as follows:

1. "Is Gynecology Dead?" by Dr. Eugene C. Gehrung, of St. Louis, Missouri.

This paper was discussed by Drs. Edebohls, Goffe, Baldy, and in closing by the essayist.

2. "Enteroptosis, with Special Reference to Intra-abdominal Pressure, Body Form, and the Position of the Stomach and Intestines," by Dr. Richard R. Smith, of Grand Rapids, Michigan.

Discussed by Drs. Charles P. Noble, Mann, Clark, Goffe, Edgar, George H. Noble, and in closing by the essayist.

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3. Anomphalosis," by Dr. A. H. Buckmaster, of Charlottesville, Virginia.

4. "Infection of Ovarian Cystoma," by Dr. Henry C. Coe, of New York City. This paper was read by title in the absence of the author.

5. "Thrombosis and Embolism following Abdominal Operations," by Dr. Joseph Taber Johnson, of Washington, D. C.

On motion, the Society adjourned until 2.30 P.M.

Afternoon Session.—The Society reassembled at 2.30 P.M., with the President in the Chair.

6. "Post-Operative Embolism," by Dr. Eugene Boise of Grand Rapids, Michigan.

This paper and that of Dr. Johnson, read at the morning session, were discussed jointly by Drs. Noble, Peterson, Reynolds, Currier, Gordon, Watkins, Baldy, Broun, Clark, Dührssen, Edebohls, Smith, Norris, Newman, and in closing by the authors of the papers.

Symposium: "Dilatation *versus* Incision of the Pregnant (Parturient) Uterus."

7. (*a*) "Artificial Dilatation of the Cervix Uteri, Indications and Methods," by Dr. George Tucker Harrison, of New York.

8. (*b*) "Dilatation of the Parturient Uterus," by Dr. Philander A. Harris, of Paterson, New Jersey.

9. (*c*) "Advantages of the Bimanual Dilatation of the Pregnant and Parturient Uterus," by Dr. J. Clifton Edgar, of New York City.

10. (*d*) "My Experience in Emptying the Uterus in the Second Half of Pregnancy," by Dr. J. Whitridge Williams, of Baltimore, Maryland. (This paper was read by title in the absence of the author.)

11. (*e*) "Dilatation *versus* Incision of the Gravid Uterus," by Dr. Egbert H. Grandin, of New York City. (Read by title in the absence of the author.)

12. (*f*) "Vaginal Cesarean Section," by Prof. M. Dührssen, of Berlin, Germany, by invitation.

The symposium was discussed by Drs. Reamy, Pomeroy, Harris, Fry, Davis, Norris, and the discussion closed by Drs. Harrison, Harris, Edgar, and Dührssen.

On motion, the Society adjourned until 10 A.M. Wednesday.

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SECOND DAY.—*Wednesday, May* 23, 1906.

Morning Session.—The Association met at 10 A.M., with the President in the Chair.

13. "The Development of Cancer in the Cervical Stump after Supravaginal Hysterectomy," by Dr. Andrew F. Currier, of Mount Vernon, New York.

Discussed by Drs. Newman, Charles P. Noble, Manton, Polk, Henrotin, Dührssen, and in closing by the essayist.

At this juncture Dr. Howard A. Kelly, First Vice-President, took the Chair, and the President, Dr. Richard R. Maury, delivered his address. He selected for his subject, "The Search after the Truth."

On motion of Dr. T. A. Reamy, a vote of thanks was extended to the President for his judicial and masterly address.

14. "Results of Vaginal Section and Drainage in Early Cases of Ectopic Gestation," by Dr. Willis E. Ford, of Utica, New York.

Discussed by Drs. Henrotin, Watkins, Stone, Mann, Gordon, Goffe, George H. Noble, Dührssen, Newman, Harris, and the discussion closed by the essayist.

Symposium: "Immediate and Remote Results of So-called Conservative Operations on the Uterine Appendages, Ovaries, Tubes."

15. (*a*) "A Review of Surgery of the Female Pelvic Organs," by Dr. Seth C. Gordon, of Portland, Maine.

16. (*b*) "The Immediate Results of Conservative Measures," by Dr. Hunter Robb, of Cleveland, Ohio. (Read by title.)

17. (*c*) "Conservative Operations," by Dr. J. Montgomery Baldy, of Philadelphia, Pa.

18. (*d*) "Facts and Figures of End Results in One Hundred Cases of Conservative Operations," by Dr. Walter P. Manton, of Detroit, Michigan.

On motion, the discussion of the symposium was postponed until the evening meeting.

On motion, the Society then adjourned until 8 P.M.

NOTE: In the afternoon the Society held an Executive Session, after which the members and guests took a seven-mile drive to Flag Rock and Mountain Top, stopping at Warm Springs for five o'clock tea and a mint julep.

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Executive Session.

The Society was called to order in Executive Session by the President at 2 P.M., May 23. A quorum was present. The minutes of the previous meeting were presented by the Secretary and approved. The Secretary announced that since the last meeting the Society had lost by death two Honorary Fellows: Dr. James R. Chadwick and Dr. R. Stansbury Sutton, and two Active Fellows: Dr. A. Palmer Dudley and Dr. Arthur W. Johnson.

The President announced that in accordance with the vote of the Council he had, on account of the death of Dr. Johnston, appointed Dr. Howard A. Kelly Chairman of the McDowell Memorial Committee.

The Treasurer, Dr. Baldy, read his annual report as follows: Balance forward, $620.48. Received: Back dues, $180.00; Interest, $10.85; Initiation fees, $100.00; Current dues, $1095.00; Books sold, $5.00. Total, $2011.33. Expenditures, $1717.41. Balance in Treasury, $293.92. Drs. Watkins and Broun were appointed as an Auditing Committee and reported the books correct.

The McDowell Memorial Committee, through its Chairman, Dr. Kelly, reported progress. By vote of the Society Dr. Ashton was added to the Committee.

On motion the following Fellows were excused for absence: Dr. Burrage, Duer, Bache Emmet, McMonagle, Wakefield, and Wylie.

At the suggestion of Dr. Findley the Secretary moved that, owing to the loss of their libraries in the San Francisco earthquake fire, a complete set of the Transactions of the Society be donated to Drs. McMonagle and Wakefield. Carried unanimously.

Dr. E. P. Davis was appointed Delegate to the International Congress of Obstetrics and Gynecologists, scheduled to meet at St. Petersburg.

The report of the Council was then read and the following were elected to Fellowship: Dr. Frederick Joseph Taussig, Dr. Frank T. Andrews, Dr. John A. Sampson. Some informal discussion was held on the subject of meeting in California

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or Florida, or some other remote centre, but no action was taken.

The election of officers resulted as follows:

President.—Dr. Clement Cleveland, New York.

First Vice-President.—Dr. Willis E. Ford, Utica, New York.

Second Vice-President.—Dr. J. Clifton Edgar, New York.

Treasurer.—Dr. J. Montgomery Baldy, Philadelphia.

Member of Council.—Dr. Richard B. Maury, Memphis.

Secretary.—Dr. J. Riddle Goffe, New York.

Adjourned.

Evening Session.—The Association reassembled at 8 P.M., with the President in the Chair.

The discussion of the symposium presented at the morning session was opened by Prof. Dührssen, and continued by Drs. Henrotin, Goffe, Harris, Peterson, William S. Stone, Baker, Newman, and the discussion was closed by Drs. Gordon, and Manton.

Symposium: "The Treatment of Vesical Fistulæ, Vaginal, Transvesical or Suprapubic."

19. (*a*) "A New and Improved Method of Operation," by Dr. A. Lapthorn Smith, of Montreal, Canada. (Read by title.)

20. (*b*) "The Technique of the Repair of Large Vesico-vaginal Fistulæ," by Dr. William Stephen Stone, of New York City.

21. (*c*) "Progressive Operation for Large Vesicovaginal Fistulæ," by Dr. Malcolm McLean, of New York City. (Read by title.)

22. (*d*) "Vesicovaginal and Vesicouterine Fistulæ," by Dr. Isaac S. Stone, of Washington, D. C.

23. (*e*) "The Abdominal Extraperitoneal and Abdominal Transperitoneal Operations," by Dr. Howard A. Kelly, of Baltimore, Maryland.

The discussion of this symposium was opened by Dr. Newman, and continued by Drs. Peterson, Noble (Chas. P.), Noble (Geo. H.), and the discussion was closed by Dr. Stone (Wm. Stephen).

On motion, the Society adjourned until Thursday, 10 o'clock.

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THIRD DAY.—*Thursday, May* 24, 1906.

Morning Session.—The Society met at 10 A.M., and was called to order by the Second Vice-President, Dr. Reuben Peterson.

24. "Shortening of the Round Ligaments within the Inguinal Canals through a Single Suprapubic Transverse or Median Longitudinal Incision," by Dr. Reuben Peterson, of Ann Arbor, Michigan.

This paper was discussed by Drs. Edebohls, Watkins, Gordon, Noble (Geo. H.), Mann, Dührssen, and in closing by the essayist,

25. "A Third Case of Renal Decapsulation for Puerperal Eclampsia," by Dr. George M. Edebohls, of New York City.

Discussed by Drs. Edgar, Dührssen, and in closing by the essayist.

26. "Report of Two Cases of Hypernephroma Renis, with Remarks," by Dr. J. Wesley Bovée, of Washington, D. C.

Discussed by Drs. Edebohls, Polk, and in closing by the essayist.

27. "Intramural Abscess in the Puerperal Uterus," by Dr. George H. Noble, of Atlanta, Georgia.

This paper was discussed by Drs. Watkins, Polk, Krug, and in closing by the essayist.

At the conclusion of the discussion on Dr. Noble's paper, President Maury said: Gentlemen: We have about reached the end of our labors, and with the valuable assistance of the Secretary every member who has been present and had a paper to read has had the opportunity to read it.

In retiring from the Presidency, I wish to thank you for your leniency and brotherly feeling toward me as your presiding officer, and congratulate you on having elected as President Dr. Cleveland, a man whom everybody respects.

I will now ask Drs. Broun and Currier to escort Dr. Cleveland to the Chair. (Applause.)

Dr. Cleveland in accepting the Presidency said:

MR. PRESIDENT: I wish it were in my power to convey to you the feeling of all the members of this Society toward you for the delightful way in which you and our Southern Fellows have entertained us in this most beautiful section of the country.

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I wish it were possible for us to meet in this hospitable place again instead of in our disagreeable large cities.

It is a great honor even to have been mentioned in connection with this office, and I prefer to defer to a later period after more mature deliberation any remarks that I may have to make. I wish to thank you, however, one and all, for your great kindness. (Applause.)

Dr. J. Riddle Goffe moved that the thanks of the Association be extended to Dr. Guy Hinsdale for his great assistance in arranging for the meeting and for the courtesy extended to the members yesterday. He also moved that the thanks of the Association be extended to the officials of the Homestead Hotel, for their solicitude for the comfort of the Fellows and guests, both in the Hotel itself and also in granting the Association the Club Room, in which to hold the meetings.

The resolutions were seconded by several and unanimously carried.

Dr. George M. Edebohls moved that a vote of appreciation and thanks be extended to the retiring President for the kind, pleasant and efficient way in which he had discharged the duties of his office. Carried.

There being no further business, on motion the Society adjourned to meet in Washington, D. C., in conjunction with the American Congress of Physicians and Surgeons, May 7, 8, 9, 1907.

J. RIDDLE GOFFE, M.D.,
Secretary.

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CONSTITUTION.

I. This Society shall be known as the AMERICAN GYNECOLOGICAL SOCIETY.

II. The object of this Society shall be the promotion of knowledge in all that relates to the Diseases of Women, to Obstetrics, and to Abdominal Surgery.

FELLOWS.

III. The Fellows of this Society shall consist of Fellows and Honorary Fellows.

The Fellows shall not exceed one hundred in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Council, by two Fellows *only*, at least one month before the first day of the meeting, each nomination being accompanied by a list of the principal publications of the candidate and of the official positions which he holds. Each candidate shall submit to the Council at least one month before the first date of meeting an unpublished paper upon some subject connected with gynecologic or obstetric science, and on nomination by the Council shall be balloted for at the annual meeting. A two-thirds affirmative vote of all the Fellows present shall constitute an election, at least fifteen Fellows being present. The names of any candidates not nominated by the Council or not elected by the Society shall be placed upon a waiting list and shall be reconsidered by the Council at each succeeding meeting. When the name of the candidate is placed upon the waiting list a copy of his paper shall be returned to him for publication if he so desires, but any such candidate shall have the privilege of submitting another paper to the Council a month before any succeeding annual meeting. A list of all the candidates, accompanied by all the information sent to the Council, shall

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be sent to every Fellow with the notification of the annual meeting.

No one shall be eligible for Active Fellowship until he shall have submitted to the Council a paper on some subject connected with gynecologic science.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Council.

The election shall take place in the same manner as that of ordinary Fellows.

They shall enjoy all the privileges of other Fellows, but shall not be required to pay any fee or be allowed to hold any office or to cast any vote.

Any member of this Society at the end of twenty-five years' active service in the Society, or at any time thereafter, at his own request, shall be placed on the roll of Honorary Fellows, and shall be so classified in the next volume of TRANSACTIONS, provided the request be made during the fiscal year for which the annual dues have been paid by that member.

OFFICERS.

V. The officers of the Society shall be a President, two Vice-Presidents, a Secretary, and a Treasurer, all to be elected annually, who, with four other Fellows, one to be elected each year for a term of four years, shall constitute the Council of the Society.

The nomination of all officers shall be made in open session at the business meeting, and the same shall be elected by ballot.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they were elected, and shall hold office for one year.

Any vacancy occurring between the annual meetings shall be filled temporarily by the action of the Council.

All officers shall be eligible for re-election.

ANNUAL MEETING.

VI. The annual meeting of the Society shall be held regularly on the fourth Tuesday in May, and shall continue for

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three days, unless otherwise ordered by vote of the Society at any executive session.

AMENDMENTS.

VII. This Constitution may be amended by a two-thirds vote of all the Fellows present at an annual meeting, provided that notice of the proposed amendment has been given in writing at the annual meeting next preceding, and that the same has been printed in the notification of the meeting at which the vote is to be taken.

BY-LAWS.

PRESIDENT AND VICE-PRESIDENTS.

I. The President and Vice-Presidents shall discharge the duties belonging to their respective offices. The President shall be *ex-officio* chairman of the Council.

SECRETARY.

II. The Secretary shall attend and keep a record of all the meetings of the Society and of the Council, of which latter he shall be *ex-officio* clerk.

At each annual meeting he shall announce the names of all who have ceased to be Fellows since the last report.

He shall superintend the publication of the TRANSACTIONS, under the direction of the Council.

He shall notify candidates of their election to Fellowship.

He shall send notifications of the annual meetings and of the meetings of the Council.

TREASURER.

III. The Treasurer shall receive all moneys due, and pay all debts. He shall render an account thereof at the annual meeting, when an Auditing Committee shall be appointed to report.

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COUNCIL.

IV. The Council shall meet as often as the interests of the Society may require.

Five members shall constitute a quorum.

It shall have the management of the affairs of the Society, subject to the action of the Society at its annual meetings.

It shall arrange the order for the reading of papers at the annual meetings.

It shall not have power to make the Society liable for any debts exceeding in total one hundred dollars in the course of any one year, unless specially authorized by a vote of the Society.

It shall have the entire control of the publications of the Society, with the power to reject such papers or discussions as it deems best.

The President, or any three members, may call a meeting, notice of which shall be transmitted to every member two weeks previous to the meeting.

The Council shall determine questions by vote, or—if demanded—by ballot, the President having a casting vote.

The Council shall constitute a Board of Trial for all offences against the Constitution and By-laws, or for conduct unbecoming an honorable physician, and shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Society shall be as follows:

I. General meeting at 10 A.M. each day.
   1. Reports of the Committees.
   2. Reading of Papers and Discussion of the same.

II. The Business Meeting, at which only Fellows of the Society shall be present, shall be held on the second day of the session, at an hour determined by the Council and announced on the program of the meeting. The Secretary's Record shall then be read; the Treasurer's accounts be submitted; the reports of Committees on other than scientific subjects be received; and all miscellaneous business be transacted.

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PAPERS, ETC.

VI. The titles of all papers to be read at any annual meeting shall be forwarded to the Secretary not later than *two weeks* before the first day of the meeting.

No paper shall be read before the Society which has already been printed or has been read before another body.

All papers that may be read before the Society, and accepted for publication, shall become the property of the Society, and their publication shall be under the control of the Council. Such papers may be published in full in medical journals, provided that they are also printed in the TRANSACTIONS.

QUORUM.

VII. A quorum for business purposes shall be fifteen Fellows.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at the annual meetings, except when introduced by the Council.

ASSESSMENTS.

IX. Every Fellow shall pay in advance the sum of fifteen dollars annually.

Any Fellow whose subscription shall be more than nine months in arrears shall be reminded of the fact by the Treasurer in writing; in event of payment not being then made, he may, on vote of the Council, be dropped from the Society.

Each Fellow shall pay on admission an initiation fee of twenty-five dollars.

Any Fellow who shall neither attend nor present a paper for three successive years shall, unless he offers an excuse satisfactory to the Society, be dropped from Fellowship.

AMENDMENTS.

X. Any of these By-laws may be amended, repealed, or suspended by a two-thirds vote of the Fellows present at any meeting, *provided* previous notice in writing has been given at the annual meeting immediately preceding the one at which the vote is to be taken.

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PAPERS

READ AT THE

THIRTY-FIRST ANNUAL MEETING

OF THE

AMERICAN GYNECOLOGICAL SOCIETY,

HELD AT

HOT SPRINGS,

Virginia,

MAY 22, 23 AND 24, 1906.

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THE PRESIDENT'S ADDRESS.

THE SEARCH AFTER TRUTH.

By Richard B. Maury, M.D.,
Memphis, Tenn.

Before entering upon the subject proper of my address, I feel that it would be remiss, on the present occasion, did I not make allusion to the great loss which we have sustained as a Society since our meeting in Niagara a year ago.

Sorrow has come upon us in the death of four of our brightest, most talented, and devoted fellows.

A. Palmer Dudley, of New York; James R. Chadwick, of Boston, who is regarded as the originator of this Society; Arthur W. Johnstone, of Cincinnati; and R. Stansbury, Sutton, of Pittsburg, true and brave men, in the prime of life and usefulness, have been called away from their labors. They will long be missed from their places in our ranks, and our Society will deeply feel their loss in its deliberations; but to abler pens than mine will fall the duty of recording their lifework, and of offering an appropriate tribute to their worth.

We may nevertheless pause to drop a tear, and then pass on, after invoking "In Memoriam," the Son of God, in the beautiful words, with which you are familiar:

> "Thou wilt not leave us in the dust;
> Thou madest man, he knows not why;
> He thinks he was not made to die,
> And Thou hast made him; Thou art just."

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For a period of twenty-five years I may bear witness that our professional lives, yours and mine, have been one continual, never-ceasing struggle to find the truth. And the question is still and ever before us, What is Truth?

In the words of Ernst Haeckel: "This great question has occupied the more thoughtful of men for thousands of years, and has elicited myriads of attempts to answer it—myriads of truths and untruths. Every history of philosophy gives a longer or shorter account of these countless efforts of the advancing mind of man to attain a clear knowledge of the world and of itself."

But Truth is elusive, is hard to grasp; indeed, it is represented as a veiled statue, the mantle of which we are trying continually to tear away, but with only partial success.

The history of this Society is but an account of our efforts to find a truthful solution of the numerous problems which confront us in the nature and treatment of the manifold diseases of women.

With a full recognition of the great advances made in some departments of medicine, we must acknowledge that many problems which we have been trying to solve, and at one time supposed we had solved, now seem more difficult and further from solution than ever before.

My meaning will be made more clear if you will follow me in some remarks on the subject of uterine displacements, which I have selected for the purpose of illustration.

In the year 1888 this Society discussed the subject of anteflexion. It numbered among its fellows many brilliant minds and leaders of medical thought. The discussion was opened by that polished scholar and brilliant teacher, T. Gaillard Thomas, who had devoted years to the study of the subject, and who had at his command large clinical material. Beside him sat Graily Hewitt of London, who had come across the Atlantic to take part in the discussion of that subject, which, in the words of the essayist, he had done

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more to further than any other man. Sir William Priestly was there also—another distinguished English physician.

Dr. Thomas felt that he was able to shed new light upon an ancient theme, and, while much had been done toward the elucidation of the subject, much more remained before its treatment could become easy or satisfactory.

He thought it impossible that any man could attain success in the treatment of anteflexion without recognition of a nomenclature which he then offered.

His etiology was simple; the most frequent causes being heavy skirts and tight lacing on the one hand, and fecal distention of the rectum on the other.

He said: "The idea that anteflexion is to a great degree a normal condition, that it is answerable for very little constitutional disturbance, and should, as a rule, be ignored, is a pernicious error, having usually for its basis either want of experience, or a desire to avoid an issue for which the speaker feels his resources inadequate."

These conclusions he had reached after an experience of thirty years. He assumed that the man who would not use pessaries in the treatment of anteflexion was unfit to practice gynecology.

The instruments he recommended were the various forms of anteflexion pessary and the intrauterine stem—the glass intrauterine stem, not gold or silver. From such means he had often achieved the most beneficial results, although he had had many instances of utter failure.

The views of the speaker were indorsed by Graily Hewitt, who had spent a great portion of his life in the study of anteflexion, who had devised a pessary for its relief, and whose teachings dominated medical thought on this subject in England. He thought that what Dr. Thomas had said about the treatment of anteflexion by pessaries was all that could be desired, and embodied the truth.

Six of our ablest fellows took part in that discussion—

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men prominent as teachers, and of abundant experience. Some, in accord with the essayist, advocated the use of pessaries. Two were very positive of the benefits derived from the intrauterine stem, which they had used for many years. One declared in favor of the operation for division of the posterior lip of the cervix, and stated that he had done Sims' old operation more than four hundred times, splitting the canal forward and backward, and that 75 per cent. of his cases had thereby been cured of sterility.

Dilatation and drainage with the perforated stem was also commended as a remedy for the imperfect development and the endometritis, which were supposed by the speaker to constitute the essential features of the disease. The etiological factor now regarded as most potent in pathological anteflexion, viz., parametritis and perimetritis, had been plainly taught in Germany for several years by Shroeder and Schultze, but was not alluded to in this discussion, except by Dr. Emmet, who, being absent, was quoted that "the largest portion of flexions have their origin in some surrounding pelvic inflammation, which, by engorgement, exudation, and contraction, ultimately deform the organ."

This is a fair exposition of the pathology and treatment of anteflexion as understood in America at that time; and these are the teachings which our Society gave forth to the world.

If the question were asked, Will we stand by them today? I would say that the teachings of 1888 must be considered erroneous. The views of our predecessors are not in accord with the views of today.

We now seldom treat "anteflexion." It is rare to find in our case-books a diagnosis of "anteflexion." Anteflexion, for the most part, is regarded as a normal condition, answerable, as a rule, for but little constitutional disturbance.

Anteflexion pessaries are regarded as useless or as having no value except that which might attach to a retroversion pessary under the same circumstances.

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The intrauterine stem which more than once has been praised, as it was in 1888, has passed out of the history of gynecology, perhaps forever, and will never again come into favor. The knowledge of pelvic inflammation is so fully disseminated that every practitioner must realize the peril to a woman from its use. No one better understood this than the essayist of 1888.

Sims' old operation is insufficient for the purpose it was intended to fulfil. We have turned away from the treatment of the flexion, and have given attention to the associated pathological conditions.

So little interest is now felt in the subject, that it has been discussed but once in this Society since 1888. Today there is but one device for straightening the flexion; that is Dudley's operation, which is offered as a means of treatment for acquired or pathological anteflexion only.

The only recent investigations into the pathology of this affection are by Bland Sutton, who, in 1904, declared that "Anteflexion is most often congenital; that the explanation of its etiology in contraction of the uterosacral ligaments is theoretical; and that this occurrence, if it takes place at all, is extremely rare."

We can therefore claim but little advance in knowledge here, unless it is in the recognition and acknowledgment of past errors.

The history of backward displacements, in like manner, presents perplexing problems not yet solved and illustrates my theme, which is to show with what difficulty we see and grasp the truth.

As you are aware, this subject comes up for discussion almost every year, and no agreement has yet been reached upon the methods of treatment proposed for its relief. At the very threshold we encounter difficulty, because we differ upon what constitutes the support of the uterus. A large majority of the gynecological writers of our time adopt the

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views of Dr. Frank P. Foster on this subject, or else some modification of them. According to this author, the supports of the uterus "ordinarily consist wholly of the anterior wall of the vagina in front, and the uterosacral ligaments behind, which together constitute a 'beam' traversing the pelvis anteroposteriorly, on which the uterus rests." A like function is claimed for the broad ligaments, which act similarly as a transverse "beam." "These structures, taken together, act like the cables of a suspension bridge, which support the uterus in its centre." (Skene.)

One of the popular authors of our time speaks of the ligaments as the means of suspension of the uterus; and still another, one of the most recent and influential, says: "The uterus is slung between the broad ligaments laterally, the round ligaments anteriorly, and the uterosacral posteriorly." An examination which I have made of eight of the text-books in use at the present day will justify the statement that these are the views commonly taught in regard to uterine supports. Six out of eight of these authorities accept these views.

When we consider the various operative procedures which have been devised for the cure of backward displacements, and note that nearly all of them involve the shortening of one set of ligaments or another, or else the suspension of the womb from above, we must conclude that the views I have quoted are in practice generally accepted by the profession.

On all sides, in the discussion of this subject, the statement is made that the uterus is sustained almost entirely by its ligaments.

I respectfully submit that these teachings are erroneous. The proper supports of the womb are not the ligaments, but the various structures which constitute the two segments of the pelvic floor, as was demonstrated by Hart and Barbour in their *Manual*, and in the *Atlas of Female Pelvic Anatomy* in 1884.

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Henry C. Coe emphasized these views in his article on the "Pelvic Floor," in *Mann's American System*, in 1887, and his declaration that "the firm attachment of the muscular diaphragm to the genitourinary organs is an important factor in the maintenance of their proper position" is the key-note to this question.

Dudley, in his *Gynecology*, has spoken to the point when he says: "The idea that the uterus is supported by the vaginal walls, or by the perineum, or by the uterine ligaments, is obsolete. The pelvic floor, as a whole, supports the uterus."

The round and uterosacral ligaments limit the movements of the uterus anteroposteriorly, the broad ligaments limit them laterally, and they all doubtless do contribute, though to a limited extent, to the support of the organ; but Hart and Barbour have shown that these ligaments should not be regarded as supports, the chief support of the uterus being the compact unbroken pelvic floor.

If it be asked what are the essential anatomical elements in this floor-structure, we encounter new questions which await solution.

Emmet taught that the rectovesical fascia attached to the sides of the rectum and vagina is the chief supporting structure of the pelvic floor. More recently, Professors Browning and E. C. Dudley have insisted upon the correctness of this view. Others believe that the levator ani muscles, especially the fibers of the puborectales and pubococcygei, are the essential structures.

Dr. W. E. Studdiford, who has recently studied the anatomy of the pelvic floor, declares that the levator ani, especially its anterior portion, together with the sphincter ani, is the chief supporting structure. His dissections show that this muscle passes along the side of the vagina with which its fibers are united; sweeps backward in close relation with the external sphincter; is attached closely to the rectum;

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and, after surrounding its lower end, unites with its fellow of the opposite side.

In the space between vagina and rectum, he demonstrates a transverse and spindle-shaped band of involuntary muscle fibers closely attached to the levators. By the action of this muscular band the two portions of the levator are drawn closer together and the posterior portion of the vagina is drawn upward under the pubes.

According to the lights now before us, these statements seem to represent correctly the mechanism of uterine support.

If we exclude the congenital backward displacements, which are supposed to represent about 20 per cent. of the whole number, the great bulk, or nearly 75 per cent., of the retroversions and flexions with which we have to deal have had their origin in childbirth and in the injuries to the pelvic floor consequent thereon.

In these cases, retroversion and descent are nearly coincident in point of time, and the problem most difficult of solution is not how to correct the version, for this is easy, but how to maintain the uterus at its normal or physiological level in the pelvis. The real problem, therefore, in the treatment of backward displacements is how to repair the injury to the pelvic floor.

Hence it is that the numerous operations, vaginal and abdominal, proposed for shortening the ligaments have failed to give satisfaction unless the pelvic floor is uninjured, and hence it is that no unanimity exists concerning the treatment of backward displacements.

When one reads a description of the various surgical procedures designed for the relief of these displacements—and their name is legion—he must turn away from their perusal with the feeling that they do not present a record of scientific progress.

In the average American woman who has borne children there is found, with or without the perineal laceration, a

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relaxed pelvic floor which fails to support the womb, and for the relief of which no entirely or generally successful operation has yet been devised. It was for the relief of this class of cases that the fixation and suspension operations were proposed.

Ventrofixation is now rejected and seldom advised. Ventrosuspension, even when expertly performed, may eventuate as a fixation and complicate labor to a dangerous degree. Hence it is hardly permissible in a childbearing woman. It is, moreover, not a scientific procedure.

It is recognized here that each of the operations alluded to has its place, though with clearly defined and closely drawn limitations.

The operations for suspending the uterus from above, or for shortening the round ligaments, or vaginal fixation, cannot be regarded as imitations of natural conditions. They do not restore natural supports, and I think that in making use of them we are far from a solution of the problem.

Further progress in the treatment of this subject will probably come through an improvement in the method for repairing the injuries to the pelvic floor, rather than by devising new operations for swinging the womb from above.

Notwithstanding the admirable operation which Dr. Emmet has devised for repairing the perineum and bringing forward the posterior vaginal wall, it cannot be claimed that any practical measure has yet been established for repairing or suturing directly the torn muscles and fascia which enter into the pelvic diaphragm.

It should be observed that we are not yet agreed upon the anatomy of the pelvic floor. We do not agree upon the exact nature of the injuries sustained by this floor in labor. How then can we be expected to agree at this time upon a method of repair?

The period at which we write, however, is full of hope

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for this subject, because of the anatomical and pathological work now being done.

It is remarkable that there should be, in the twentieth century, important differences among anatomists in their description of the levator ani muscle, and yet it is so.

Professor Browning's work is a valuable contribution to our knowledge of its anatomy.

Dr. Studdiford's frozen sections show that when injury to the pelvic floor occurs it is the fibers of the transverse muscular band between vagina and rectum that are torn near their junction with the levator. The levators are then no longer bound together, the vagina cannot be drawn up under the symphysis, the sphincter ani sags down and backward, and relaxation of the floor results. These sections indicate clearly where the sutures should be passed to bring the torn ends together.

Within a few years past several methods have been proposed to bring accurately in apposition these torn muscles and fasciæ, of which the operations of Harris, of Chicago; Noble, of Atlanta, and Holden, of Johns Hopkins Hospital, are notable examples.

Since 1901, Dr. Coe has obtained satisfactory results in repairing these injuries by means of the circular buried suture suggested by Studdiford, which he says "does permanently re-attach the torn fasciæ and restores the parts to their normal condition."

It is needless to say that the last word upon this subject has not been spoken.

It is in work along these lines, through a restoration of the pelvic floor, that I look for a solution of the problem—the successful treatment of backward displacements.

"Knowledge comes, but wisdom lingers."

Rawlinson, the historian of ancient Egypt, states that more than two thousand years ago, at Sais, on the Rosetta

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branch of the Nile, there was erected a temple to Neith, the Egyptian Athene, the embodiment of Truth and Wisdom. The figure of the goddess was veiled, and on her shrine was this inscription: "I am all that was, and is, and is to be; and no mortal hath lifted my veil."

To lift that veil, I may add, is our constant endeavor; but it will never be lifted—the truth never fully told.

Inasmuch as the whole truth may not be learned—since we cannot behold the goddess without her veil—these problems will never be all solved; and the future of this Society, if we continue true to ourselves and to each other as fellows, can be limited only by Time, which is everlasting.

Now, in conclusion, I beg to thank you for the great honor you have conferred in electing me to preside over your deliberations.

When you gave me the "white stone" a year ago, it was so unexpected that I had not words to express my thoughts; and even now I cannot tell how grateful I am for this mark of your esteem.

My feelings, however, remind me of something Pericles said to the Athenians in one of his orations: "And not riches, as some say, but honor, is the delight of men when they are old and useless!"

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IS GYNECOLOGY DEAD? OR GYNECOLOGY VERSUS OVERDONE AND MISAPPLIED SURGERY.

By E. C. Gehrung, M.D.,
St. Louis, Mo.

Many years ago when gynecology was in its glory as a benefactress to mankind, it gave rise to pelvic and abdominal surgery as a necessary complement. Soon general surgery absorbed the pelvic and abdominal surgery, and in the false hope that all the diseases of women could be brought under its domain, endeavored to ignore and finally to deny existence to gynecology. Not only has surgery failed in fulfilling some of its promises and for many years has unchallenged committed a great deal and much to be regretted harm by these attempts, but it has nearly succeeded in the accomplishment of its great wish to exterminate gynecology. It has, however, succeeded only in debasing and depraving this most useful and necessary specialty.

Nobody holds the great and wonderful achievements of surgery in greater esteem than myself. I wish it distinctly understood that my remarks do not apply in any way derogatory to this noble art and science, but only to the errors committed in the desire to accomplish too much; the mistaken idea that all diseases that human flesh is heir to, should or could be cured by surgery and by it alone.

Like with all such unjust and over-enthusiastic moves, the pendulum has swung too far, and according to the laws of

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nature has to begin its return. I do protest and appeal to you against that unnecessary, if not criminal, surgery that has been and is still being practised, in the cases that cannot be benefited by the knife and others that can at least be as well or better treated by other means. In many of these latter the knife may obtain a quicker and perhaps just as good result, yet at the cost of mutilation. Many surgeons after cooling of their enthusiasm have become aware that they have gone too far and have begun to look for a way out of their dilemma, as the following conversation between Dr. Kehrer, of Heidelberg; Dr. Halbertsma, of Utrecht, and myself will illustrate. The conversation took place in 1896 in Geneva, Switzerland, after the meeting of the Periodical International Congress of Gynecologists and Obstetricians. Dr. Kehrer remarked as follows (I quote from memory):

"There is a large class of patients who complain of various kinds and degrees of suffering. I am fully convinced of the reality of their complaints, though upon the most careful examination I cannot find anything to operate. It goes against my conscience to say to the poor woman, "Go home and suffer patiently, nothing can be done for you," or on the other hand to make an exploratory operation without knowing what to look for."

"What is your experience, gentlemen, and what do you do with such cases?"

Dr. Halbertsma answered that his experience was the same as Dr. Kehrer's and that he was equally at loss what to do.

My answer was that I treat these cases gynecologically with good results and with great satisfaction to my patients and myself. After the explanation of my treatment both Dr. Kehrer and Dr. Halbertsma promised to try to follow my advice.

Many eminent surgeons have expressed generally the same opinion to me since then.

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Now, gentlemen, what is *your* experience, and what do *you* do with such cases? Do you send the patients home or operate at random to see whether you can find an excuse for the cutting? Formerly there was always an ovary, now there is always an appendix that can be removed to relieve the conscience of the operator. The times are ripe that this kind of practice should cease.

Gynecology, publicly condemned to death, totally forgotten by many, ignored for convenience sake by others, has been remembered by few and improved upon by some, and other branches of the healing art have contributed considerable to its present value.

It would lead me too far to consider or review all that is left of or has been added to gynecology during these years of its retirement. I shall confine my remarks to the mechanical part of it, and more especially to that most dishonored, most absolutely ignored part called forward displacements of the uterus, etc.

All uterine displacements should be considered under the light of ptoses and herniæ, in fact they are ptoses and herniæ, and cause the symptoms of both in addition to their own. When the keystone between pelvis and abdomen is displaced, abdominal ptoses must follow, they may be minor enteroptoses only or may extend to the kidney and other abdominal organs, and thus produce symptoms for which the simple uterine displacement would not account satisfactorily. The replacement of the pelvic organs frequently relieves the ptoses, at least their symptoms. Backward displacements have not been forgotten because they are the glory of the surgeon. Their treatment by supports, however, has much more completely fallen into desuetude if I may reason from the small number practising and their imperfect way of handling them, as also their imperfect knowledge that appears to have survived the cataclysm of gynecology. If the Alexander and similar operations should not be done

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where there are adhesions, it is exceedingly questionable whether they should be done at all.

The situation concerning forward displacements is altogether different. Since anatomists say that anteversion and anteflexion are the normal positions of the womb, the pathologist denies pathological effects to antidisplacements, the practitioner is only too happy to ignore a state of affairs for which the means of relief were (apparently) so imperfect and so difficult to manipulate, with so little or no results in prospect. The surgeon who occasionally recognized it and found, despite his ingenuity, that little if any benefit by operation could be obtained was also willing to add his testimony to the non-existence of pathological antidisplacements.

Though standing nearly alone I claim that forward displacements do exist plentifully, giving cause to many otherwise unrecognized troubles; that they can be cured; that we have the means; and that they can easily be used by any physician or surgeon who will take the trouble to learn how. Nothing that is worth knowing comes without trouble. Many of these displacements get well within a comparatively short time, while in others the support (pessary) must be worn a long time, sometimes for years. The wearing of a pessary may be considered as much a cure as the wearing of a cicatrix or other mutilation.

I believe I have improved and simplified the mechanical department of gynecology to such an extent that anybody who has any mechanical ingenuity can easily learn to practise it. I have obtained beautiful results in the relief and cure of symptoms and diseases which have been declared as utterly incurable by many eminent gynecologists both in Europe and America. Constipation, cystocele, procidentia complete with enterocele and of long duration (one of forty-one years) have been completely cured. Not only with antidisplacements, but likewise with retrodisplacements, my results have been extremely satisfactory.

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Always remember that a careful differential diagnosis between gynecological and surgical cases is of prime importance.

During my stay this preceding fall and winter in New York City I have had, by invitation of some of the professors, the opportunity to prove in a number of clinical lectures, at several of the postgraduate schools in that city, some of my statements to their perfect satisfaction (as I have their permission to state).

This is only a small part of gynecology, but I think it shows plainly that gynecology should be revived by practice and teaching as a legitimate, honest, and honorable branch of the healing art, as there is an immense field for it, especially if practised in conjunction with the noble art and science of surgery and the collateral sciences.

If my premises are correct, and I feel convinced that they are, then all the unnecessary and wrongful surgery should be abolished as quickly as possible and gynecology substituted in its place, so that a woman may have the opportunity to get sick and well again without necessarily undergoing one or several frequently useless and sometimes detrimental operations.

DISCUSSION.

Dr. George M. Edebohls.—The sum and substance of Dr. Gehrung's interesting paper relates to the treatment of uterine anteversion and anteflexion. He points out what can be done for these conditions without operation. In the matter of anteversion and anteflexion of the uterus, my own views and experience have undergone radical changes since I began the practise of gynecology as a specialty. Whenever I find on examination a well-marked anteflexion of the uterus, I at once suspect that I have to deal with a case of excessive

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mobility of the uterus, and I proceed to test the matter at once by bimanual manipulation, performed in the following way: One hand is placed on the lower abdomen to manipulate the fundus, while the index finger of the other hand is introduced into the vagina to manipulate the cervix. By this bimanual manipulation the uterus is placed in retroversion. I then remove the hand from the abdominal wall, and the finger from the vagina, wait a minute or two, and re-examine. If I find the uterus remaining in retroversion, where I placed it, I conclude that the case is one of excessive mobility of the uterus, and equivalent therapeutically to a retroversion of the uterus. I treat excessive mobility of the uterus exactly as I treat retroversion of the non-adherent, freely movable uterus, by inguinal shortening of the round ligaments, and with such practically invariable success that I have ceased to look for a better or more satisfactory method of treatment.

We have long known that shortening of the round ligaments has cured cases of anteflexion, and the explanation of the fact, which only came to me with time, is contained in the above statements.

Dr. J. Riddle Goffe.—I would like to say in reference to the point Dr. Edebohls has brought out more particularly, that it has been my conviction for many years that anteversion is a normal position, and I have taught and still teach that anteversion should be stricken out of the list of pathological positions of the fundus. I do not find in my later years any occasion whatever to interfere with a fundus which lies well to the front. I believe that in a condition of that kind when symptoms are present they can be accounted for by other conditions than the position of the fundus, and I invariably find them. I do not try to manipulate the fundus in any way or to fix it, or to interfere with its mobility.

I regard anteflexion of the uterus in a different light. As a rule, unless it is an acquired flexion, it is the result of an undeveloped uterus, and I treat it along the line of improving its nutrition, stimulating its circulation, and so developing the organ. If the anteflexion is acquired, I treat it very much in the same way. I do not interfere with it surgically by shortening its ligaments or by attaching the fundus to abnormal tissue.

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DR. GEHRUNG.—I am sorry to see that my paper has been so misunderstood as to convey the idea that anterior displacements was the only subject under consideration, while in reality that subject was selected only as illustrative of the many that constitute gynecology and because it is the most abused and unjustly ignored. The discussion having so far been limited to anterior displacements, I shall also limit my remarks to the same. Those anteversions and flexions which can be so easily changed into retroversions and flexions, referred to by Dr. Edebohls, are really neither the one nor the other, but simple relaxation of the uterine supports, for which any mode of suspension or support may be used with benefit. I have tried suspension in a number of forward displacements, with good surgical but at times with bad gynecological results, necessitating afterward treatment which would have been sufficient in itself without the operation. I believe that the majority of those who use surgical means in these displacements would prefer gynecological treatment, if they were the patients instead of the doctors. The immediate results of operations may be good, while the remote effects are frequently bad, because all the operations for antidisplacements practised up to date are unphysiological and unphilosophical.

The treatment by pessaries (the Gehrung anteversion pessary, which is so little understood and yet so effective) permits the removal of the pessary when the case is cured.

I do not fully understand the position taken by Dr. Goffe.

DR. GOFFE.—My position is that anteversion is not a pathological condition.

DR. GEHRUNG.—Anteversion or retroversion is pathological only in so far as it causes pathological results from traction on some and pressure on other tissues and organs, and the return pressure the uterus receives from these; in other words, its sequelæ rather than its existence are pathological. If you find a woman with severe backache, with impeded locomotion, with hypogastric pain, with cystocele, with nervous disturbances of all degrees, even to the point of insanity, etc., and if by the correct use of an anteversion pessary you obtain the immediate and remote relief of the symptoms, how can you deny the pathological condition of these displacements? Operations that will bring

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about this displacement permanently are not advisable. The number and kinds of pessaries extant are so confusing to the practitioner, and even to the specialist, that dexterity cannot be acquired with any kind; the condemnation of all will be the natural outcome.

The use of pessaries requires much study and practise, like the skilful use of the knife. By long years of patient study I have learned that only two kinds of pessaries are necessary to meet all cases of uterine displacements capable of being relieved or cured by them. These are retroversion and anteversion pessaries, all of which can easily be formed from a graded nest of hard-rubber rings, a sample of which I herewith exhibit. Any necessary shape and modification can be produced in a few seconds' time, as I have taught to many. The statement of even eminent surgeons that pessaries have been tried and found wanting may be taken *cum grano salis*, as I have good cause to state.

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ENTEROPTOSIS.

WITH SPECIAL REFERENCE TO BODY FORM, THE MECHANICAL CONDITIONS COVERNING THE POSITION OF THE ABDOMINAL ORGANS, AND THE USE OF THE *x*-RAY IN DEMONSTRATING STOMACH AND INTESTINES.

By Richard R. Smith, M.D.,
Grand Rapids, Mich.

The literature on the subject of enteroptosis has grown to large proportions. If we add to it all that has been written in regard to movable kidney, gastroptosis, and displacements of the pelvic organs, this is multiplied several times.

Since 1885, when Glenard first pointed out the general character of the ptosis, our conceptions have gradually broadened.

Enteroptosis is no longer to be regarded simply as a ptosis of one or more of the abdominal organs, but as a distinct habitus, characterized: (1) By a flabbiness or hypotonus of the body tissues; (2) by a lack of vital energy; and (3) by a more or less pronounced backwardness in development. It is identical with the so-called phthisical habit.

If we examine such patients, we note a long, narrow, shallow, and usually more or less collapsed thorax, flaccid abdominal walls, usually prominent abdomen, changes in the curves of the spine, a general relaxation and flabbiness of the muscular connective-tissue structures, and, as a rule, abnormal lightness of weight. There is a ptosis of the

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abdominal viscera, and perhaps a displacement of the pelvic organs. Combined with these objective symptoms we find a list of subjective phenomena, the principal ones of which we may enumerate: General weakness, an inability to carry on her work without exhaustion, nervousness, oftentimes melancholy, constipation, and disturbances of digestion and other functions, such as those of menstruation and urination. Patients commonly have pain in the back, in one or both sides, and in the lower abdomen, bearing-down pain, leucorrhœa.

It is not my purpose to discuss the subject exhaustively but to direct your attention simply to a few phases of this disease: the form of the body, the mechanical conditions governing the normal and prolapsed abdominal organs, and the condition of the stomach.

Body Form. When we study the normal woman, we find a thorax relatively somewhat longer than a man's, but of good depth, and fairly broad at the waist. The epigastric angle measures about ninety degrees, or perhaps slightly less. In a well-built thorax the lower ribs run but slightly downward from the horizontal. The spinal column in its upper portion is quite straight, the arms set well back; beginning at the lower lumbar region is a marked lordosis that terminates at the buttocks, which protrude well beyond the general axis of the body. The thorax, as a whole, is placed forward of this general axis; the abdominal walls are flat, or protrude but very slightly; the limbs are straight; the foot well-arched; the muscles firm and covered with enough adipose to round out the angles.

I show you here several pictures of what one may regard as normal women. Note in the first picture (Fig. 1) the well-developed chest, abdomen, and limbs. The waist is broad; the thorax of good depth; the whole figure bespeaks health and vigor. The second picture (Fig. 2) shows much the same thing. The thorax is well-built, the abdomen flat

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the limbs well-rounded. The third picture (Fig. 3) shows the back of a well-developed, normal woman. Note here the marked lordosis of the spine—somewhat exaggerated, perhaps, by the position in which she stands—also the prominent buttocks, the flat abdomen, the well-developed chest, the well-muscled body and limbs.

Let us, however, regard an exaggerated case of enteroptosis. The thorax is long, narrow, flat, and sunken—the so-called paralytic thorax. The lower ribs, instead of running nearly horizontal, slant sharply downward; the neck is often very long; the intercostal spaces are increased in the upper part of the thorax, but not below; the tenth rib is often floating; the waist, or middle zone of the trunk, is slightly increased in length. If the patient is standing, the abdomen is prominent, especially in its lower portion. The epigastrium is flattened. The woman often has round shoulders, and instead of a well-marked lordosis in the lumbar region, the back is nearly straight and the buttocks flattened. This last expresses a tilting of the pelvis forward, so that its axis is much more vertical than usual. The muscles of the body are generally slender and flabby. She has little adipose tissue, the arch of the foot is often flattened, although the patient is light of weight.

If we inspect the abdomen of a woman with enteroptosis (Fig. 4), we are at once struck with the length of the waist and its smallness. The epigastric angle is sharp, and there is apt to be a decided flatness or slight concaveness of the epigastrium. With such a picture before us, we suspect at once that the right kidney may be palpable; that, under dilatation with gas, the greater curvature may be found at or below the umbilicus; and that there will be other evidences of visceral ptosis.

This picture (Fig. 4) is that of a married woman, aged thirty-three years, who has never borne children. The form is typical of enteroptosis. The width at the waist is

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FIG. 1

FIG. 2

FIG. 3

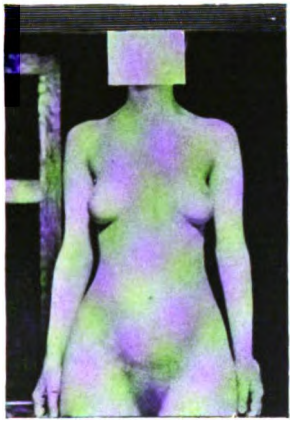

FIG. 4

FIG. 5

FIG. 6

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17.5 cm. (7 inches), and the depth 17 cm. (6⅔ inches); the epigastric angle is long and sharp, the index 94.5.[1] Her color and nutrition, however, are fairly good.

Becher and Lenhoff have reduced this observation to definite figures. They take the jugulopubic distance and divide it by the circumference of the body at the waist and multiply the result by 100. This index gives the clue to the comparative size of the upper abdomen. They found a palpable kidney in practically all with an index of over 77, and none in patients with less than that.

Harris states that the cause of floating kidney lies in a particular body form. The chief characteristics of the body form are marked contractions of the lower end of the middle zone of the body cavity. He first divided the jugulo-symphysis distance by the circumference at the tenth rib, practically the same as the method of Becher and Lenhoff. Finding this method open to certain errors, he then took the lateral diameter of the body (standing) at the level of the end of the sternum, and again this diameter at the lower border of the tenth rib, then divided the latter by the former and multiplied by 100. This gave him an index which he claims to be reliable. All cases showing an index of over 81.8 are negative, and all under it are positive. Besides this, he made other careful measurements of the middle

[1] It might be well here to state that tight clothing, either corsets or waist-bands, cannot cause such a body form as we here describe. The influence of the corset has been made the subject of much discussion, and views have varied widely. We find those who ascribe to its use the most deleterious effects, and also, at the other extreme, those who believe that it is a help, rather than a detriment, to the woman who wears it. Becher and Lenhoff examined twenty-four women of Samoa, and found this same body form and palpable kidneys in a number of them. These women had never worn corsets or waist-bands, nor had their ancestors. A number of women, whom I have examined, with the most markedly contracted waists, have either never worn corsets at all, or if so, only occasionally. We cannot conclude from this, however, that a woman with enteroptosis may not be injured by the wearing of a tight corset or waist-band.

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portion of the trunk, with the idea of reducing to figures the body capacity there.

I have taken careful measurements of 56 women in reference to enteroptosis, measuring the depth of the chest at the end of the sternum, the diameter of the waist, and obtaining the index of Becher and Lenhoff. I have noted, also, the slant of the ribs, the epigastric angle, the form of the thorax, abdomen, and back. Although these observations are too few in number to warrant elaborate deductions, a number of facts stand out clearly. First, that the long, narrow, shallow thorax, small waist, and protuberant abdomen are accompanied by visceral ptosis, and that the woman with the normal thorax, large waist, and flat abdomen has her abdominal organs in place. Incidentally, I think, too, that one may safely say that the sharpness of the epigastric angle usually corresponds to the narrowness of the waist and the downward deflection of the ribs to the flatness of the thorax. We may note the relative collapse of the thorax by the observation of these two signs.

From a number of pictures that I have taken I have selected several for illustration. In Fig. 5 we see the form of a woman aged thirty-five years. She was frail in infancy, but passed a fairly vigorous childhood and girlhood. She had one child fourteen years ago, and was fairly well until she had an ischiorectal abscess ten years ago. Since that time she has had a number of such abscesses, and six months ago a pelvic abscess, which discharged through the vagina and has kept her in bed since. A rather frail body to begin with, you see, though her sickness during the last year has had much to do evidently with her present condition. This picture was taken two weeks after opening and draining the pelvis from below. Note here the very flat back, the prominent, flabby abdomen, the decided slant to the ribs. The shallowness of the chest, on the other hand, is not particularly marked. The depth is 17 cm., the width at the waist

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FIG. 7

FIG. 8

FIG. 9

FIG. 10

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24 cm. (9½ inches). Her index (Becher and Lenhoff) is 70. Examination under gas shows the lower border of the stomach about two inches below the umbilicus; the uterus is retroverted.

Fig. 6. A nullipara, aged twenty-four years, who in early childhood was very frail. After menstruation began her health improved, and she states that she had good health until she was eighteen, when she was infected with gonorrhœa. Since this time her health has suffered from frequent attacks of pelvic inflammation. We did a hysterectomy for double pyosalpinx. Notice the straight back, rather prominent abdomen, very decided slant to the ribs, and the shallowness of the thorax—only 15 cm. (6 inches). Her index is 83. This woman's appetite and digestion were good, in spite of the fact that the greater curvature was found about two inches below the umbilicus.

Fig. 7. An unmarried woman, aged thirty-three years, who since earliest infancy had never been strong. However, she claims to have been in good health until fifteen years ago, when eighteen, when she went to work in a factory. She soon broke down under this, and has been an invalid ever since. This is the most pronounced and typical case of the congenital type that I have met this year. She is undersized (4 ft. 10 in., 147½ cm.), weight 74 pounds; she is pale, slightly jaundiced, and her face expresses marked melancholy and lassitude. Her movements are all slow, and she responds languidly to questioning, and it is only possible to interest her in matters concerning herself. Note here the frail, slender figure, the round shoulders, the long neck, the straight back, in which the normal lordosis is almost eradicated. The ribs slant very sharply downward, the thorax measures 13 cm. (5¼ in.) only in depth, and but 20 cm. (8 in.) in breadth. Her index is 97. It is possible to encircle the waist with the hands. The abdomen is but slightly prominent, the epigastrium flat or slightly concave. She has a

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small hyperplastic, anteflexed, and retrodisplaced uterus. The right kidney is palpable; the lower border of the stomach under dilatation, is found three inches (7½ cm.) below the umbilicus.

Fig. 8. In this picture we see an example of the acquired type, so called. A farmer's wife, aged thirty-three years. During childhood was perhaps more robust and vigorous than the average child. She married young; has had four children, of whom she has had all the care. Besides this, she has done all the housework without help, has milked cows, carried in water and wood, and in the rush season has gone into the fields to pitch hay with the men. There has been a gradual loss of health; she has become exceedingly nervous; has hysterical attacks, trembling, and rigidity. She complains of pain in both groins, across the abdomen, in the right side, bearing-down pain, general abdominal soreness, above the hips and round the waist. She feels constantly tired, has no appetite, and complains of abdominal distention, regurgitation, and a heavy feeling in the stomach. She noticed that she has been getting round-shouldered for several years back. Note here the decided rounding of the back, the prominent abdomen, the loss of proper lordosis to the spine. The thorax, on the other hand, is 17.5 cm. (7 in.) in depth and 22 cm. (8⅝ in.) in breadth. There is considerable slant to the ribs. Her index is 75. Note also the strong, well-developed arms, and on the whole the well-muscled body. The right kidney is easily palpable the uterus retroverted, the pelvic connective tissue and outlet relaxed. The greater curvature of the stomach under dilatation lies one half-inch above the umbilicus.

Fig. 9. In this picture we see a back which viewed from the side is almost perfectly straight. The lordosis is completely eradicated. This woman, in addition to an enteroptosis of a congenital type, has had a fibroid uterus complicated with pus-tubes.

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These backs were, I believe, first pointed out by Mathes. The method of taking profiles and marking the ninth rib was suggested to me by his paper. They bespeak a giving way to pain or weakness. They are very common in enteroptosis, and are, in a way, rather proportionate to these two symptoms. They improve as the woman regains strength and health. It is not uncommon to find a well-formed back in such patients. This young woman (Fig. 10) has a rather slight degree of the trouble. The thorax measures but 15.5 cm. in depth; her index is 80; the right kidney is palpable. She is, as you see, well nourished, and the back is normal.

When we come to study the mechanical conditions prevailing in enteroptosis, we at once encounter a rather complex and difficult problem. It is this very complexity that has led to the expression of so many different opinions in the matter. I shall not attempt here to review them.

Let us first regard the conditions normally present. We must first rid our minds of the idea that the abdominal viscera hang upon or are supported—to any appreciable extent, at least—by their ligaments or mesenteries. These act simply as guy-ropes, preventing excursions beyond certain limits. The abdomen is a hermetically sealed cavity. Owing to the fact that the visceral mass, as a whole, is capable of great change in form and position, many of the same laws govern it that would govern so much water in a like cavity.

The upper part of the abdominal cavity is surrounded by the rigid thorax, about one-half of which it occupies. In front are the firm abdominal walls. Above is the diaphragm. Within the pleural cavity there exists a so-called negative pressure (*i. e.*, atmospheric pressure minus the elastic pull of the lungs). This negative pressure tends constantly to draw the diaphragm upward. The weight of the abdominal viscera draws it downward. The balance of the weight is

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borne by the pelvis and anterior abdominal wall. The rigid upper abdomen must ever remain filled with the viscera; they cannot drop downward without producing a vacuum, which, under existent forces, is impossible. Under normal conditions the upper abdomen contains the liver, kidneys, stomach, spleen, pancreas, and part of the intestines. Their weight pulls downward on the diaphragm, inward on the rigid lateral walls. It is reasonable to think that when these walls are less firm than they should be they will collapse. In enteroptosis we have just such a lack of firmness. As a consequence, the lower thorax draws inward, the diaphragm downward—as can be shown by the *x*-ray—and the epigastrium becomes flat or concave. If the abdominal walls below are flaccid, they bulge, and no longer bear their share of the weight; this tends further to exaggerate these changes. The matter of weight may explain, also, the changes in the rest of the thorax; the slant of the ribs downward, the widening of the intercostal spaces, the prolapse of the anterior wall, with consequent lessening of the anteroposterior diameter.

We have been speaking of the abdominal organs as a whole; let us regard them individually. First, the liver. Its position is unique. Lying directly in contact with the diaphragm, it cannot leave it without producing a vacuum, since intestines or omentum cannot slip in between. It can glide forward or backward, but only to the limit of its ligaments, which do not allow much excursion. Held so closely to the diaphragm, it takes but little part in the ptosis. In a few cases, however, it drops far enough forward with its ligaments to become palpable beneath the border of the ribs. The kidneys are held in no such way. It is perfectly possible for intestines or soft parts to slip between them and the overlying parts, and they readily take part in the ptosis. The reason for the right kidney being so much more susceptible to this than the left is not settled. All the theories

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until now advanced lack sufficient proof. The fact remains that the left prolapses less often than and not so far as the right. The splenic flexure of the colon also tends to remain fairly well fixed. The intestines with their long attachments move downward and hang upon their mesenteries.

Let us now consider the stomach. On examining patients in reference to enteroptosis, observers have for a long time been impressed with the fact that a large percentage of them presented a decided ptosis of the stomach. On examining 100 patients in reference to this point, I found the greater curvature under dilatation to be as follows: 52 cases below, 22 at, and 26 above the umbilicus. Examinations were always made in the prone position, one-half dram of tartaric acid and one dram of bicarbonate of soda, each in half a glass of water, being used. This corresponds in a general way to the figures of other observers.

This method is open to considerable error. Not only may we occasionally mistake gas in the colon for the stomach, but the gas from the latter, passing quickly on into the small intestine, may give us a false reading. Again, it is difficult to obtain readings in the standing position, and those in the prone position do not always give the full extent of the error. Still, it may give, in a general way and roughly, the position of the lower border of the stomach. In this series of cases I have also outlined the upper border of tympany. With the knowledge which we possess of the position and shape of the stomach, it seemed to me that this latter finding was practically worthless. In nine cases, Dr. Hulst, of Grand Rapids, has taken for me a series of *x*-ray pictures in order to compare them with other findings. The method adopted was as follows: An ounce of bismuth was given in a pint of milk at noon, on an empty stomach. As soon after this as possible—usually within an hour—two *x*-ray pictures were taken, as follows: The first in the prone position, the tube being placed twenty inches from the body

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and as nearly opposite the umbilicus as possible. In order to mark the umbilicus—the landmark commonly used in discussing this question—a dime was placed over it and held with plaster, and one directly opposite, on the back. If then the ray from the tube at this distance produced superimposed shadows of the two coins, we knew that the structures lying in the neighborhood were subject to little or no distortion. The second picture was taken similarly, but in a standing position. In order to determine the motility of the stomach, another was taken six hours afterward. A normally functionating stomach should, of course, be empty at this time. At the end of about eighteen or twenty hours a fourth picture was taken to outline the colon.

I wish here to show the plates obtained from one of my patients. This is the young woman whose profile I showed in Fig. 7. This first picture was taken twenty minutes after the bismuth meal, with the patient in the prone position. The caudal pole of the stomach is found three inches below the umbilicus; the lessor one, one inch below. Note the fish-hook shape of the lower portion. You must bear in mind that the stomach extends from the diaphragm above, which can be seen here, to its lower portion. The folds of the stomach above have retained some of the bismuth.

In this picture (taken immediately after the first) the lower border of the stomach is dimly, but still distinctly, outlined, and can be seen five inches below the umbilicus. Here, also, we see traces of the bismuth in the stomach above.

When we come to examine stomachs with the *x*-ray we see that the gas method gives us no adequate conception of the shape. For instance, the lesser curvature, as ascertained by the gas method, came one inch (2½ cm.) below the ensiform. As a matter of fact, the lowest point of the *lesser* curvature in all of these cases lay quite near the lowest point of the *greater*—from ¾ inch (2 cm.) to 1½ inches (4 cm.) difference.

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FIG. 11.—Taken twenty minutes after meal. *X*-ray picture taken from woman shown in Fig. 6.

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FIG. 12.—Taken one hour after eating, patient standing. *X*-ray picture taken from woman shown in Fig. 6.

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FIG. 13.—Taken six and a half hours after eating. *X*-ray picture taken from woman shown in Fig. 6.

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FIG. 14.—Taken twenty-two hours after meal. *X*-ray picture taken from woman shown in Fig. 6.

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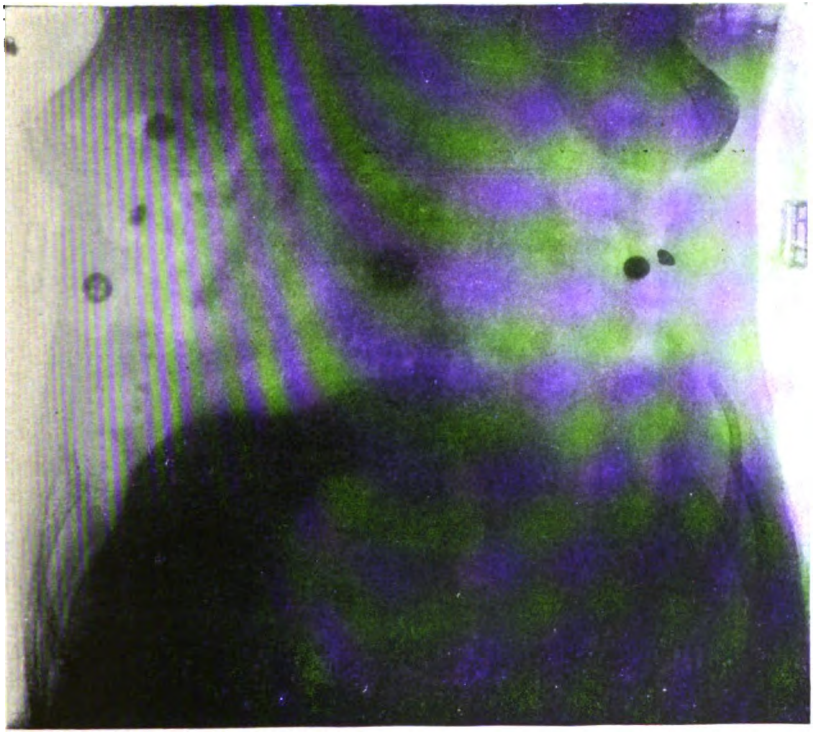

FIG. 15.—Normal. Taken immediately after meal.

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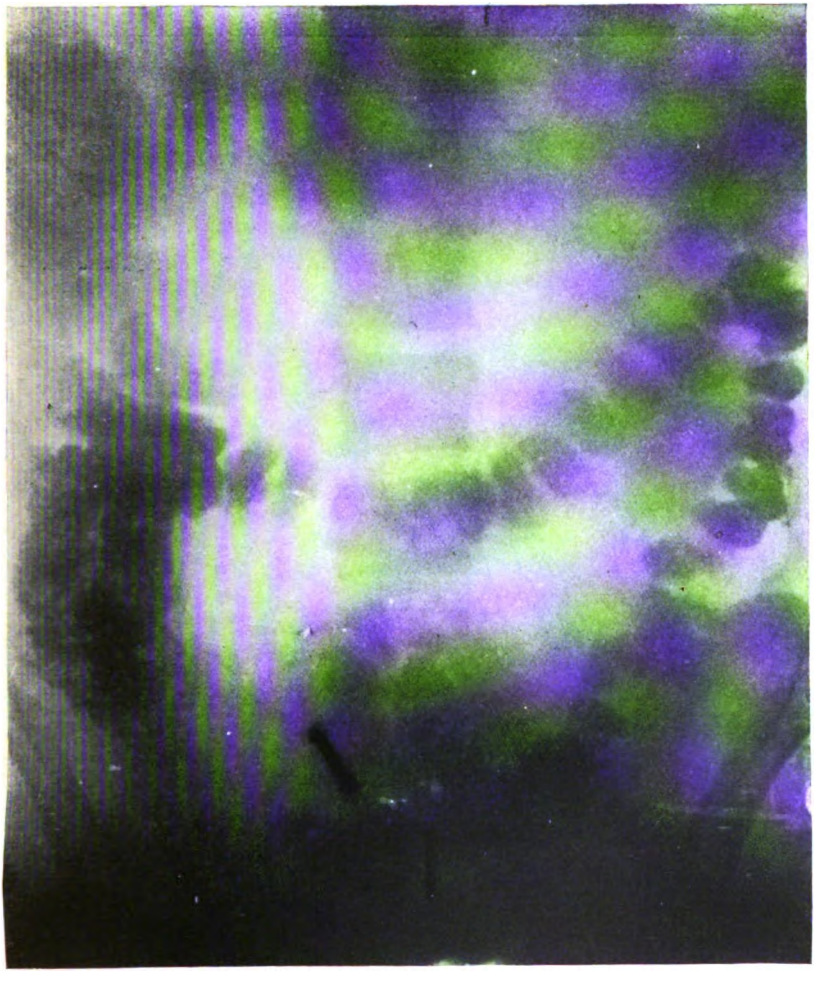

FIG. 16.—Normal. Transverse colon taken twenty-seven hours after meal.

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In examining these cases, we at once ask ourselves, What is the normal size and shape of the stomach? I believe that the recent views of Holzknecht are as near the truth as any we have obtained. He has examined a large number of stomachs with bismuth under the fluoroscope, and believes it much better than the use of pictures. He came at once upon stomachs in which the long axis was vertical, in which the difference between the caudal portion of the greater curvature—lying higher or lower over the navel—stood at a lower level than the pylorus. This lower portion formed a hook. On account of the frequency of this form, we have always regarded it as normal. There came, however, a much smaller percentage to observation, in which a much smaller stomach without this formation, but with the pylorus as the deepest portion, existed. He thought that this might be the normal stomach—until now rather vaguely called microgastria. The fact that the frequent vertical form in its width and elevation varied so much, while he found a constancy in this new form, and that the differences in the former formed a well-graded series of changes which ended in the second form, and that this second form should give the best result,—an engineer would build it so,—brought him to the conclusion that this really was the normal stomach.

I have here the plate of the stomach of a healthy young man, showing an approximately normal stomach (Fig. 15). Here we see the lower border lies well above the umbilicus and nearly on a level with the pylorus. The whole organ is small.

What takes place with the stomach in enteroptosis? Two points of the stomach remain fixed within comparatively small limits—the pylorus and cardiac. It may be presumed that the stomach walls take part in the general muscular relaxation of the other tissues of the body. Loaded with food, its walls give way, its cavity enlarges. The same factors that tend to displace the other organs of the upper

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abdomen in enteroptosis may also act here. This enlargement can take place in only one direction, namely, downward. Held at the cardia and pylorus, being unable to extend much laterally, the caudal portion of the greater curvature is gradually pushed downward. The stomach stretches lengthwise, and produces the shape which we have seen. Empty, these stomachs do not contract, as does the intestine, but the walls fold in, as has been shown by Holzknecht, and when the stomach again receives food, they rather unfold than dilate.

In this series of pictures there was shown in all but one a considerable difference between the lower borders taken with the patient prone and standing. This variation measured from ¾ inch (2 cm.) to 2½ inches (6½ cm.); usually the variation was 1½ or 2 inches.

This third picture was taken six and a half hours after the meal. The stomach has risen about one inch (2½ cm.), and still contains bismuth. The sphincter of the antrum is here well shown. There appears now the ascending colon, much prolapsed. Lastly comes a picture taken twenty-two hours after the meal, showing the colon still filled with bismuth, some gas above it. The splenic flexure is here shown, distended with gas and containing bismuth. The transverse colon, as you see, was much depressed. Here, below, the entrance to the rectum is indicated by a small amount of bismuth.

As will be shown by these pictures, the large intestine takes part very decidedly in the visceral ptosis. When we compare a considerable number of cases, certain facts stand out. First, that the hepatic flexure is lower than the splenic, and is more apt to be displaced and in greater degree, although it is not rare to find the splenic flexure, as in this case, somewhat prolapsed. It remains often fairly well-fixed. The transverse colon sags considerably. It is, of course, always found below the lower border of the stomach.

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I present here Fig. 16, the picture of the colon of the young man whose stomach I have just shown you as being normal. It may be regarded as normal. One sees here the cecum distended with bismuth; the transverse colon looped gently and quite easily across the abdomen; the splenic flexure higher than the hepatic, and one can trace here the sigmoid and rectum. The course of the intestine, you see, differs somewhat from that usually given in the text-books.

An examination of the stomach contents of patients suffering from enteroptosis does not show startling abnormalities. Different observers come to different conclusions; some stating that hyperacidity was the rule, others that there was a lack of hydrochloric acid. It is the variation in these findings in different cases that probably led to these results. In twelve patients with enteroptosis suffering from stomach symptoms, there were six cases of hyperacidity: three were normal, and three showed a hypoacidity. The peptic digestion was good in all, with the exception of three, where it was slow. Two of the cases showed considerable mucus; the others, no more than the usual amount. Three or more examinations were made of each patient. It was noticeable that the findings varied considerably at different examinations of the same patients. Whereas the number of these patients is too small to draw any definite conclusions, corresponding as they do with the findings of others, it would be safe to say that the chemical changes are not constant.

Finding stomachs so misshapen and displaced, it has been the most natural thing to ascribe the stomach symptoms from which so many patients with enteroptosis suffer to the mechanical conditions there present, and a number of theories have been expounded—kinking of the pylorus, weakened musculature through dilatation, difficulty in raising the contents up over the pylorus. None of these have seemed quite sufficient. Certainly, a considerable number of patients with markedly elongated stomachs

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are free from any stomach symptoms. Nature undoubtedly makes an effort to compensate for the unnatural condition of things, and fortunately for all of us, she is often able to handle satisfactorily the food which we take. Just in which direction incompensation takes place, or where the normal function is broken, or how, I do not think we are prepared to say. The facts until now obtained do not warrant our being too positive.

In the patients whom I have examined in reference to this point, neither with gas nor by the Röntgen ray method did there seem to be any particular association between the amount of the stomach displacement and the severity of the stomach symptoms. The patient represented in Fig. 8, for instance, had a great deal of stomach disturbance, although anatomically it was one of the best that we examined. The woman represented in Fig 6 had absolutely no stomach symptoms, although with the ray the lower border of the stomach was shown 2 inches (5 cm.) below the umbilicus. Of seven from whom plates were made six hours after a bismuth meal, five had stomach symptoms, and their stomachs all contained bismuth; the two without symptoms, however, had stomachs free of bismuth at that time. This would seem to indicate that the symptoms were associated in some way with a lack of motility.

RELATION TO GYNECOLOGY.

A paper on enteroptosis presented to a gynecological society would hardly seem complete without some reference to its relationship to pelvic pathology. The subject is of especial importance to the gynecologist, since the majority of the patients that come to him for relief show more or less signs of this condition. Out of 100 patients examined Mathes found but 17 who did not show distinct evidence of it. It may form merely the background of the picture

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which he has before him, or it may be the complete picture without other pathology. At any rate, its frequent occurrence and great importance should be borne in mind in every examination that he makes. To gauge the exact relationship is often a very difficult matter. It is made all the more so when there is present a marked neurasthenia.

It can be practically left out of consideration, as far as treatment goes, in patients presenting neoplasms or pelvic inflammatory diseases. It is, however, of great importance in considering the lacerations, the various displacements of the uterus, as well as that large class of patients presenting pelvic symptoms, so called, with slight or undemonstrable lesion. One should consider the matter of operation in such cases with great care, and be most guarded in his prognosis. Above all, in case operation is done, it is very necessary that a proper course of treatment is carried out afterward if we expect to get results. We know that enteroptosis and fair health are not incompatible. The enteroptosis may even be of a decided degree, and still the woman go through life comfortably and accomplish her work. It is well to bear in mind, however, that these women as a class do not bear the ordinary exigencies of life as well as more vigorous women. Care, excitement, grief, child-bearing, too much work, too little recreation and rest—all are liable to affect her, and are usually the immediate cause of her suffering. As a rule, these patients are conscientious and care-taking—their ambition greater than their strength.

TREATMENT.

Only a word as to treatment, since a discussion of the matter in detail would exceed the limits of this paper. The treatment of enteroptosis should really begin in childhood, and it means all that proper hygiene can do for our children. The outdoor life, the exercise, and school-work should be

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carefully balanced. A child should be encouraged in the various sports, especially those which develop the chest and the muscles of the trunk. Mathes has laid great stress on the development of the chest in this affection, and it seems to me that he has not exaggerated its importance.

If the woman comes to us already suffering from the symptoms which are cited to us so often, it sometimes seems best to put her immediately to bed. I give them an abundant easily digested diet, massage, and meet any necessary indications as to bowels and digestion. Pain usually decreases rapidly under this plan.

Following childbirth, great care should be given a woman to see that the care and nursing of her child are not preventing a proper recovery of tissue tone. Practically, this is often very hard to carry out, but the importance of the matter should be carefully explained and every effort made to see to it that the woman has proper care. Maillart ascribes a most happy influence to childbearing in such patients when properly guarded.

I wish to emphasize the great good that can be obtained from an outdoor life. I advise many of them practically, as I would a patient suffering from tuberculosis. A life entirely in the open air, with forced feeding, will do more for these patients than anything of which I know. If the abdomen is prominent or very flabby, and especially if there is a general abdominal tenderness, so often present in bad cases, and more especially if I find that by standing behind her and placing the hands over the lower abdomen (the patient standing) and lifting up, relief is obtained, I advise a well-fitting abdominal bandage.[1] This sign, called by Glénard "epreuve de sangle," may also be used in the determination of the nature of the pain. If the patient

[1] The effect of this maneuver may be seen with the fluoroscope after a bismuth meal. The lower end of the stomach may be raised several inches.

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is young and the thorax more or less mobile, I have often given a system of breathing exercises with the idea of increasing the lung capacity and the size of the upper abdomen.

I wish to thank Dr. Henry Hulst, of Grand Rapids, for his kindness in making the *x*-ray examinations, and for the many valuable suggestions in connection therewith.

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DISCUSSION.

Dr. Charles P. Noble.—The Society is to be congratulated on this most interesting paper and on the demonstration concerning a subject which is relatively new. I do not wish to discuss the entire bearing of the paper, but will confine my remarks to one phase of it.

In the first place, I believe it is a mistake to teach that all patients who have loose kidneys have enteroptosis. I regard that as an error. It is only in the minority of cases in which loose kidney is complicated with enteroptosis. It is true, that most cases of enteroptosis are accompanied by loose kidneys; but the converse, in my judgment, is not true. I have seen a few cases of loose kidney due to traumatism, but the number is very few. The great majority of women who have loose kid-

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neys are unmarried; therefore, the question of childbearing is a very small factor in these subjects. It has much more to do with enteroptosis by causing a flaccid condition of the abdominal muscles, but so far as the kidney itself is concerned, it is a small factor. That is the main thing I wish to say.

As to the question of how to deal with these cases, while my experience has not been large, I have operated on a number of them, and the operation devised by Dr. Beyea, supplemented by suturing the gastrocolic omentum to the abdominal wall, will satisfactorily take care of most cases of dropped-stomach. This consists of shortening the gastrohepatic omentum, in other words, suspending the stomach, and in addition to that, stitching the gastrocolic omentum to the anterior abdominal wall. I have operated on three cases. All of them were anatomical cures. One woman was a crank. In the other two cases the results were perfect. Dr. Beyea, of Philadelphia, has collected a series of cases operated on in which the results were quite satisfactory.

So far as how to deal with the ptosis is concerned, I can conceive that it would be a comparatively simple and satisfactory method to deal with dropped-colon, particularly the transverse colon, by suspending it by means of the gastrocolic omentum, but so far as the small intestine is concerned, we cannot do anything surgically except that when the abdominal wall is stretched out, we can cure the diastasis which may be present. It seems to me, the rest cure following surgery, and that followed by physical culture, are the two things that are necessary to a perfect cure in this class of cases, and surgery alone would be deficient.

Dr. Matthew D. Mann.—While I believe that congenital conditions favor displacement of the uterus very much, there are two causes which have not been dwelt on that are very important. One of them is dress. The all-pervading style which we find among civilized women all over the world, by which the waist-line is more or less constricted, has a tendency to displace all of the abdominal organs. There is not more than one woman in a thousand whose waist-line is not constricted more than it ought to be. We find this condition more common in women than in men. In men it has been shown to be sometimes due to the wearing of tight belts, like blacksmiths, for instance, who constrict their waists. I think it can be shown that almost

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all women have very little if any movement at the waist-line, perhaps not more than one-quarter of an inch, if measurements are taken. This constriction has a tendency to force down the stomach and large intestine. It acts not only mechanically by fixing the centre of the body, and increasing pressure below that, but it acts in another way by interfering with physical development. If corsets are put on young girls they cannot develop the abdominal muscles. I have seen corsets put on girls as early as four and five years, and frequently this is done in the cases of girls of twelve or fourteen. When this is done, at that period, the thorax will never be of the proper shape, and the abdominal muscles not being able to resist the effect the contents of the abdomen will be driven down. In other words, acts in two ways, namely, by forcing down the contents of the abdomen and by interfering with development.

As regards the treatment of this condition, I must say I have been puzzled in the past as to how to deal with it. I have tried the plan Dr. Noble mentions, of stitching the gastrocolic omentum to the abdominal wall. There is objection to that in an ordinary laparotomy done for pelvic trouble, in that the incision is so far below the umbilicus that we cannot get far enough up in the abdomen to lift the stomach up where it belongs; therefore, the operation has to be made by enlarging the incision. I have done the same thing for the colon. I have not been satisfied with operative procedures for the cure of these conditions.

Dr. Clark has an operation for the cure of prolapse of the colon, particularly of the sigmoid, which, I hope, he will tell us something about. So far, I do not think we are in a very good position to treat these conditions surgically, yet they cause a great deal of discomfort. In a number of cases, where we open the abdomen, we find the stomach down in the pelvis. I have seen it down behind the uterus, and I believe that we ought to try in some way to correct this condition, to devise a better operation than we have done so far. I have given up preaching against tight corsets, because women will wear them as long as it is the fashion. When they become civilized, if I may use that expression, and corsets are done away with, we will find that enteroptosis or prolapse of the stomach and intestines will be much less common than now.

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Dr. John G. Clark.—No more valuable paper could have been presented to this Society than the one on enteroptosis, which Dr. Smith has so ably illustrated with his splendid photographs. This field undoubtedly presents a line for research work in the practical care of these cases. As I view these patients they constitute the largest class of neurasthenic and neurotic individuals; indeed the more one studies the subject the more he is convinced that this is the most fertile source of neurotic symptoms. For several years I have looked askance upon the theories which attribute the various intestinal disturbances of neurotic individuals to movable kidneys, and have held that a movable kidney is but one, and probably the least lesion constituting merely a minor part of a general enteroptosis.

This field has not been satisfactorily worked because the clinical methods, such as inflation of the stomach, inflation of the colon, etc., do not give positive diagnostic results. The use of the proctoscope and sigmoidoscope have also failed to render much assistane in this class of cases. We may, therefore, look with the greatest satisfaction upon the discoveries which have been made during the last two years through means of *x*-ray pictures, which are of signal value in indicating the diagnosis in various ptoses of the hollow viscera. Dr. Pancoast, at the University of Pennsylvania Hospital, has done phenomenally good work during the last year in this field, and in some very obscure cases has at once cleared the diagnosis by means of the bismuth injections followed by the *x*-ray photographs.

Now that we may with certainty discover these ptoses, the question of treatment is brought more prominently into the foreground. For the last four years we have tried various operative measures in these exaggerated cases, with only partially satisfactory results. As yet I do not consider any operation that has been devised as altogether effective. I have now had twenty-one cases of ptoses of the viscera, particularly of the transverse colon and of the sigmoid flexure. A condition of redundancy of the sigmoid flexure has frequently been alluded to in literature, but it has been looked upon more as a congenital than as an acquired anomaly. If every surgeon will look carefully into his abdominal section cases, he will find in a considerable proportion an undue lengthening of the sigmoid flexure with more or less

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reduplication of its folds in the pelvis. When constipation has become an acquired habit in a woman I believe that this redundancy is especially liable to take place as the result of an overloading of the sigmoid loop, and constant tugging and overstretching of its mesentery. The greater the redundancy becomes, the greater the constipation. In some of these cases there has been alternating diarrhea with obstinate constipation. In some of the worst cases we have resorted to one of two operations for its correction. One is to loop the sigmoid by means of stitches passed through the intervening spaces between the bloodvessels in the mesentery and stitch this back into the loin, holding the bowel in a festoon-like way. I recognize the fact that this is very likely to be of temporary value only, and this surmise has been proved correct in three or four cases where, upon heavy exertion, the sigmoid has become dislodged. This operation, therefore, is not very satisfactory so far as permanent results are concerned; in some cases, however, it has given very satisfactory symptomatic relief. In a few other cases where the redundancy was so excessive as to actually threaten life from obstruction, I have stitched the dorsum of the sigmoid to the anterior abdominal wall. I know this is in direct opposition to anatomical and physiological laws, but can see no other way of relieving this serious disability short of a resection of the redundant loop, which would, of course, be a serious operation for this condition. I believe, however, that we may in the future find it necessary in some of the worst cases to excise a part of the sigmoid in order to decrease this extensive redundancy.

In all of my discussions and papers upon this subject I have especially laid stress upon the fact that this condition should not be looked upon as operative except in rare instances. The fact that in five years of hospital work I have not performed such an operation more than ten times upon the sigmoid bears out this statement. In general gastroptosis, in which there is participation of both the stomach and the transverse colon, a very different proposition is presented. Even in these cases I am of the opinion that early habits of constipation play a very decided role in the etiology. Given an overloaded sigmoid and transverse colon, there is always very decided tension placed upon the gastro-

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colonic omentum with direct tugging upon the lower border of the stomach. It is, therefore, hardly possible for a transverse colon to become ptosed without more or less participation of the stomach. In some of these exaggerated cases, where a patient has not received any benefit from medical treatment, I have employed Coffey's operation. In some instances I have caught the gastrocolonic omentum above the colon and sutured it transversely to the anterior abdominal wall. In others I have caught the omentum below the transverse colon and used it to form a hammock-like swing for the stomach, attaching it transversely to the abdominal wall. This operation, as shown by the *x*-ray negatives before and after the operation, restores the stomach and transverse colon to very nearly their normal position. The attachments, however, are at best slender, and we fear there will be a recurrence of the dislocation by either lengthening or the actual breaking of the adhesions between the omentum and anterior abdominal wall. Taken all together the reports from twenty-one cases of various ptoses (sigmoid, transverse colon, and gastroptosis) I would say that in not more than 50 per cent. of cases has there been a perfect functional cure; the rest of these cases give the usual story, some of them being slightly improved, some no better, while a few claim to be worse than before the operation. With the unsatisfactory type of operations which, as I have said, flies in the very face of anatomical and physiological laws, I believe we are not warranted in employing these measures except in the most exaggerated cases, and not until some skilled physician shall have employed all of the usual methods for the correction of enteroptosis. My rule at the University of Pennsylvania Hospital is as follows: Whenever my medical confreres have taken a case thoroughly in hand and after exhaustive treatment have reached their limit without any improvement in the case and are willing to accept an operation on an experimental basis, I am willing to try some of the operative measures which have been suggested. This means, therefore, that I am very conservative in these cases, and I cannot imagine any worse policy than the indiscriminate employment of operative measures in these cases, for I believe that they will cast even worse reflection upon surgical art than have the almost innumerable nephropexies which have been performed without sufficient indication.

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Physicians are unquestionably rendering great good to this class of patients by means of diet, properly fitting corsets, etc. I must say, from my experience and observation, that these women frequently get symptomatic relief, so that a great majority of them do not come to operation. I am quite willing, therefore, that this means be exhaustively employed before resorting to operative procedures.

DR. J. CLIFTON EDGAR.—There is one cause that has not been mentioned by Dr. Clark, and that is the too early getting up after confinement. We see this frequently: A strong, healthy woman goes through her confinement without much if any trouble, and she is quite proud to be able to make the statement that she was up and about at the end of twelve days. Shortly after this her troubles begin. She drifts into the hands of the stomach specialist, and he finds dropping of the stomach; yet before her confinement she had no such trouble. Ten to one the gynecologist or woman attributes it to some uterine trouble, a displacement of the uterus perhaps, whereas, as a matter of fact, the trouble is due solely and simply to dropping of the stomach to the point which has been described today. That is one cause of trouble. Another cause is habitual constipation, or constipation alternating with relaxation of the bowels, produced by the constant administration of cathartics during pregnancy. There is a lack of involution. Whether we believe in involution of the abdominal and recti muscles or not, there is a faulty involution of the intestinal supports in some way. We see it particularly in women who have mild hydramnios or somewhat excessive distention from a large child or twins. These are the women who, unless they are properly gotten up after confinement, suffer from these conditions, and finally drift into the hands of the stomach specialist. And the point in prophylaxis which I would like to make is involution of the abdominal wall before the woman gets up. It takes time to do that. There are many factors in prophylaxis. Massage is a valuable means. I think a careful getting up after confinement and a longer puerperium than some women are willing to submit to are important factors in prophylaxis. Personally, I believe in these women wearing an abdominal support for three months after confinement, and especially in the cases of

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primiparæ. If I can get women to wear a good fitting support in the shape of tights, which will support the lower recti and the lower oblique muscles, they will rarely get these displacements of the stomach and intestines.

Dr. J. Riddle Goffe.—Dr. Mann has spoken of the dress of women and has denounced the use of corsets. The straight front corset is a great improvement over that previously worn by women, and I even go so far as to say that it is a beneficial and useful garment for them.

Instead of using abdominal supporters, as I formerly did after laparotomies, I put the woman in a straight front corset, which I have made carefully by a corsettiere who carries out my idea. This gives the woman support up as far as the waist, and a loose-fitting corset from there up. This corset supports the abdomen beautifully. Women like it very much, and some of them continue to wear it for years. I have also recommended the wearing of this corset by women who have a pendulous abdomen. Unless the corset is made in an extreme way and out of the natural form, I believe it is a good thing.

With reference to gastroptosis, I will say that I have operated on two cases in which there was dropping of the stomach. One of them was the wife of a physician, who came into my hands for a retroversion of the uterus and an ovarian tumor. The latter was about the size of an ostrich egg. When I removed the ovarian tumor, I found that the stomach had dropped partly into the pelvis. So far as I could determine, the stomach was not especially dilated. I enlarged the abdominal incision to pass my arm in, and after first denuding the anterior surface of the stomach, I passed two catgut sutures of chromic gut through the walls of the stomach, getting a good bite, and then with my hand passed through the wound I carried them up, and brought them up through the abdominal wall, first making an incision through the skin, so that the stitches, when tied, would be buried. That woman suffered terrifically from indigestion and lack of nutrition. She was markedly anemic. She was a helpless sort of woman. That stomach has remained where I placed it, according to the most approved diagnostic methods, and she has greatly improved in her digestion and in her nutrition. She was in my office two weeks ago. The operation was

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done a year ago. She has been relieved of her dyspeptic symptoms.

The second case was that of a very nervous young typewriter operator, who was in the habit of taking messages off the phonograph, or taking letters that had been dictated to the phonograph, on the typewriter. She was extremely nervous. She had marked indigestion. She had been in the hands of different physicians in New York for six years. She had taken everything the doctors had recommended without relief. I found her stomach down at the brim of the pelvis. I made an incision over the normal position of the stomach, and scraped the anterior face of the stomach well up toward the cardiac end with gauze, until it was almost completely denuded of its peritoneum. I then took the anterior wall of the stomach, lapped it on itself, and stitched it down with three rows of buried catgut sutures. I put in silk and stitched it up to the abdominal wall, as in the previous case. The operation was done in December. As after-treatment, I put her in the Trendelenburg posture, kept her there for two weeks, so that the foot of the bed was two and a half feet from the floor, then I gradually let the bed down. She left the hospital at the end of four weeks. While she had formerly suffered terrific pain after taking anything into the stomach, even a swallow of milk or a swallow of water, that disappeared after the operation. I have not seen her for a month, but have seen her from time to time, and she has greatly improved. She is rid of the pain and dyspeptic symptoms. She is digesting her food, and has gained fifteen pounds in weight.

I do not know whether I am violating the rules of surgical procedure on the stomach or not, but I have stated the facts as nearly as I can relate them. I simply report these cases for what they are worth.

Dr. Charles P. Noble.—Recently I have been studying the literature of nephrorrhaphy, and one of the authors of a paper I read was one who said that loose kidneys were just as common in Arabian women as in American women. Arabian women do not wear corsets, which is the valuable point in this report.

I would like to take advantage of this opportunity to say a word or two about the other ptosis, and that is eversion of the

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rectum, which was not mentioned by the author of this paper. I have treated that condition for years by suturing the longitudinal band in the front of the rectum to the anterior abdominal wall. It is a simple, easy, and entirely satisfactory operation. All of the patients have done well.

DR. SMITH.—The discussion on the paper has brought out many interesting points. In regard to the matter which Dr. Mann has emphasized, it is well enough perhaps for us to think that dress may be a causal factor in cases of enteroptosis; that is, a tight corset may exaggerate the condition. But we must bear in mind that enteroptosis cannot be caused by the wearing of a tight corset nor by tight lacing.

Dr. Noble has brought out the point that this condition is common in the women of Arabia who do not wear corsets, and Becher and Lenhoff, who examined twenty-four women from Samoa, found floating kidney in several. They found this same body form and contracted upper abdomen among these women who had never worn tight bands nor corsets.

The discussion seems to have centred principally about the treatment. In my paper I have gone over a good deal of this, which I shall not do now. I do not believe that we can expect very much from the present methods of operation upon the stomach. In the first place let us see what we are dealing with. We have an elongated, stretched-out stomach extending from the diaphragm downward. By operation we simply raise the caudal end. The stomach as a whole is neither raised nor reduced in size. Again, there is little relation between the amount of ptosis so called and the stomach symptoms. A woman may have the lower border down in the pelvis and yet have a satisfactory digestion. At other times we see anatomically a stomach lying altogether above the umbilicus and attended by marked disturbance of digestion. For instance, the woman in Fig. 8 had the lower border of her stomach, as shown by the *x*-rays, one-half inch above the umbilicus, and yet suffered severely from gas and distress after eating. While the woman in Fig. 6, with greater curvature two inches below the umbilicus, was free of symptoms. In estimating present results from operation, we must not lose sight of the oftentimes excellent results obtained by medical men from rest and proper food.

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THROMBOSIS AND EMBOLISM FOLLOWING ABDOMINAL OPERATIONS.

By Joseph Taber Johnson, M.D.,
Washington, D. C.

Dr. Keith, of Edinburgh, about fifteen years ago, when complimented on his splendid results in the removal of uterine and ovarian tumors, said: "My success would be greater still if it were not for peritonitis; it is peritonitis which beats us."

In those days it did beat us. In our improved surgical technique, nursing, and environments, we have very little fear of peritonitis in these days.

Lawson Tait remarked about the same time, when complimented on his marvellous success in 138 abdominal sections without a death, that "the last word had not yet been said about ovariotomy;" that "a certain mortality of about 2 per cent. would probably always attend these major operations, even in the best hands, due to accidents beyond the control of the surgeon, and about 1 per cent. would be due to unexpected malignancy, thus leaving 97 per cent. of recoveries when operated upon at the best time by the best men."

Thomas Addis Emmet has said: "It is the unexpected which most frequently happens in abdominal surgery."

Your attention will be briefly directed in this paper to one of the unexpected happenings, not exactly an accident, which unfortunately follows a certain small percentage of our abdominal operations, and which fortunately has more

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to do with their morbidity than with their mortality. I refer to those cases of thrombosis, chiefly of the femoral vein, from which an embolus is occasionally detached, and which may. and sometimes does, cause a fatal pulmonary cardiac or cerebral embolism. These conditions are not, as a rule, preventable, while they are known to follow more frequently in the wake of supravaginal hysterectomies for the removal of uterine fibromas than in that of any other abdominal operation, with the possible exception of uterine suspension for the relief of retrodisplacement of the uterus. Femoral venous thrombosis may occur, however, during convalescence from perfectly aseptic minor gynecological operations, such as those upon the cervix uteri, vagina, or perineum, and they have been reported also as sequelæ of typhoid fever, pneumonia, and influenza.

All are, perhaps, very familiar with this complication from time immemorial, as it develops during the puerperium, and is described in text-books on obstetrics under the name of phlegmasia alba dolens.

At our Niagara Falls meeting last year, we had the pleasure of listening to a most elaborate and instructive paper on sudden death immediately after childbirth, or operations on the pelvic organs of women, by our distinguished fellow-colleague, Dr E. P. Davis, of Philadelphia. The sudden deaths reported in this paper, and in the subsequent discussion which followed its reading, were caused mostly by immediate pulmonary embolism or heart-clot, while the cases to which I wish to cali your attention are of postoperative femoral thrombophlebitis, occurring generally between the second and third week of a perfectly uneventful convalescence, as a rule, and following, so far as could be determined, perfectly aseptic operations upon patients for the most part free from septic infections at the time of the section.

According to Bosher, of Richmond, in his report of seven

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cases of postoperative femoral thrombophlebitis, "if infection plays any part in the development of the lesion, this is seldom shown by other symptoms, for in most cases the wound heals aseptically, and the progress of the case prior to the appearance of the phlebitis is otherwise satisfactory."

Upon the causes as well as the condition itself, most of our modern text-books on gynecology and abdominal surgery are silent, Hirst being the only author who devotes any attention to this subject. He says femoral thrombophlebitis follows about 3 per cent. of abdominal sections, that it occurs usually in the left leg, and that its etiology is obscure. First symptoms are pain in the calf of the leg and in the groin, the leg rapidly swells, becomes milk-white in color, and pits on pressure In addition to bandaging and covering the affected limb, he recommends an application of unguentum Credé, ichthyol and glycerin or analgesic balsam along the course of the femoral veins, and absolute quiet until recovery, so as to avoid the possible occurrence of a fatal cardiac or pulmonary embolism.

Kelly has drawn attention, in his book on appendicitis, to the occurrence of pleurisy and pneumonia during convalescence from appendectomy, and traces their causation to small emboli detached from femoral thromboses which occasionally follow this operation. He thinks we cannot give a positively favorable diagnosis in any abdominal operation until after the expiration of a month, on account of the possible and unexpected occurrence of femoral thrombosis from which a fatal pulmonary embolism may occur.

Davis, in the paper above referred to, gives as causes of pulmonary embolism producing sudden death after labor or pelvic operations, pre-existing infection, mechanical violence, altered conditions of the blood serum, and lesions of the walls of the bloodvessels.

The etiology, however, of the form of thrombosis under consideration does not appear to be settled. There are

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two opinions held at present which are directly opposed to each other. As Bosher states it, according to the first the lesion starts as a phlebitis due to infection at the time of the operation, while the second theory regards thrombosis due to traumatism as the primary lesion, which, in turn, is responsible for the inflammation of the vein. Those who adopt thrombosis as the causative factor sustain their theory by reporting a series of operations in which a larger proportion of the perfectly aseptic cases had femoral thrombophlebitis than occurred in those previously infected.

Clark makes this contention, that injury to the epigastric veins by retractors, holding open abdominal incisions during protracted operations, is the cause of the trouble, and in proof draws attention to his forty-one cases, in which he insists that infection could not have been the cause, inasmuch as in his long series of cases septic operations were not as frequently followed by phlebitis as were the aseptic ones.

In my own series of eight cases, there was infection at the time of the operation in only one that was noticeable, at least by the usual symptoms, and no other characteristic evidence of the condition developed up to the time of the development of the thrombosis.

My own view of the causation in previously non-septic cases is partly that of Davis and partly that of Clark, namely, that the mechanical violence to the walls of the vessels which occurs at the site of the operation, and by the use of retractors, starts up an inflammatory process which gradually extends to the femoral vein, where thrombosis results in a certain unexplainable number of cases. Were traumatism the only cause one might expect postoperative femoral thrombophlebitis in nearly all cases of difficult pelvic surgery. Were a pre-existing infection the chief cause, or infection introduced by the surgeon at the time of the operation, one might naturally expect phlebitis to follow in nearly all

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our septic cases. But it has been shown by Clark and others that exactly the opposite conditions most frequently prevail.

This is so often the case, that Cordier and others have given as the title of their papers on this subject, "Non-septic Thrombophlebitis" and "Thrombophlebitis following Aseptic Operations;" "Aseptic Postoperative Femoral Thrombophlebitis," etc. That infection plays a certain role in the causation of some cases of femoral thrombosis is evident by their occurrence during typhoid fever, influenza, and other infectious diseases, such as pneumonia and postpartum infections. Steiner has reported forty-four cases of femoral thrombosis following pneumonia. The curious fact seems to be, that in a large proportion of these cases, no matter what the cause may be, the left leg is the one most frequently affected.

The anatomical theory insisted on by Clark and supported by Welch and Recklinghausen suggests a very plausible explanation. The epigastric veins so frequently mechanically interfered with by the retractors in use during most abdominal sections enter the femoral vein at an obtuse angle to the blood-current, thus giving rise to an eddying motion of the blood, which Recklinghausen advances as a most favorable condition for the formation of a thrombosis. Welch regards Recklinghausen's theory as a "valuable contribution" to our knowledge of thrombosis, and both he and Clark explain the occurrence of femoral thrombosis on the left side more frequently than on the right as being due to the more difficult return flow from the former, in consequence of the greater length of the left common iliac vein, its passage beneath the right common iliac artery, and probably to pressure upon this vein by a distended sigmoid flexure of the rectum.

This same causative influence seems to operate in those cases in which femoral venous thrombosis occurs in the

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course of the acute infections above mentioned, inasmuch as we find it nearly always developing in the left leg.

As the great majority of these patients recover, and as great difficulty has been experienced in procuring autopsies in those rare instances where death has taken place suddenly from the occurrence of pulmonary embolism in the course of the malady, few opportunities are presented for a bacteriological examination of the thrombi. Welch, however, is quoted by Bosher as directing attention to the fact that even the finding of bacteria in the thrombus would not necessarily prove its infectious origin, since this might well be due to an invasion of the tissues during the time immediately preceding death, as pointed out by Flexner in his article on terminal infections. At present we seem scarcely able to state definitely the causative influences which bring about these cases of postoperative femoral thrombophlebitis. That they appear more frequently after operations in the female pelvis than after operations in any other part of the body, is a fact on which modern writers on this subject generally agree.

Dearborn, in an exhaustive article in the *Annals of Gynecology and Pediatrics* for November, 1904, reviewed the work of twenty-five surgeons of Boston, in which this fact stood out very prominently, and he further states that it is quite possible that many cases of pleurisy, pneumonia, and pulmonary abscess following abdominal operations are due to emboli.

Dr. G. Brown Miller has recently published a paper on embolic pleurisy following these operations. The condition of the blood after severe hemorrhages, either before the operation for uterine fibroids or malignant disease, or at the time of their removal, undoubtedly has something to do in favoring the formation of both pulmonary and femoral thrombosis and embolism. Agnew and others have stated that "after operations in which much blood

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has been lost there is always more or less tendency to the formation of coagula," but this condition, I suspect, applies more directly to pulmonary than to femoral thrombosis, as in the latter condition a considerable loss of blood is not generally held to have any marked causative relationship. Dr. Wilmer Krusen, in a paper in the April number of the *American Journal of Obstetrics*, reported and collected thirty-two cases of pulmonary embolism, twenty-two of which were rapidly fatal, following abdominal and pelvic operations.

Writers generally agree that there is little or nothing, so far, definitely known, or evident at the time of the operation, to lead to any suspicion that thrombosis or embolism is likely to occur in any given case; a considerable loss of blood is supposed to favor the coagulation of that remaining in the vessels, and should put us on our guard both as to management and prognosis.

While fatal pulmonary embolism occurs, as a rule, much earlier than femoral thrombophlebitis, they both make their appearance without preliminary symptoms, and practically render it impossible for us to pronounce a patient free from danger until at least a month has elapsed, from any abdominal or pelvic operation, especially in women.

Thrombophlebitis rarely shows itself until after the end of the first week, and in some reported cases as late as the fourth week, and usually in the left leg. One of Bosher's cases occurred on the thirty-second day after operation, and in several after leaving the hospitals.

In Clark's cases this leg was affected twenty-five times, the right leg eleven times, and both legs five times. In cases where the operation has been on the right side, the left leg is the one usually thrombosed. This was noticed in four of Clark's cases.

In two cases reported by Willy Meyer, the left leg was affected, and upon its restoration the right became involved also.

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In four cases reported by Vander Veer, the left leg *alone* was involved. In my own eight cases, the left leg was affected first in each instance, while in two the right was subsequently attacked.

In none did the trouble appear earlier than the second week, while in one fatal case after apparent recovery, while the patient was getting ready to leave the hospital, very sudden pulmonary embolism came on, and she died in a few moments after the onset of her first symptoms.

There is little to be said in regard to the diagnosis, prophylaxis, or treatment. Having its possible occurrence in mind after any abdominal or pelvic operation, we should find no difficulty in differentiating it from rheumatism, neuralgia, or any other complaint.

Increased aseptic precautions might lessen their possibility, on the theory of its infectious causation, and greater care in the use of retractors, protecting the soft parts by gauze pads under these instruments, might lessen the danger of traumatism to the epigastric veins, suggested by Clark.

Patients, especially those who had lost much blood or had been transfused, might be kept a longer time more quietly in bed, and the unobstructed and easy return venous circulation facilitated by the elevation of the foot of the bed immediately after operation.

The treatment, according to Bosher and others, is largely negative. Palpation is to be performed only when absolutely called for, and then with the greatest care, on account of the possibility of dislodging a portion of the thrombus, and thereby causing pulmonary embolism.

Complete rest in bed, elevation of the limb, enveloping the affected leg in cotton held in place by a lightly applied bandage, will usually result in complete recovery in two or three weeks without suppuration.

Some surgeons recommend the application of mercurial and belladonna ointments, but there is some doubt if the

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manipulation required in use might not result in more harm than good.

The patient should not be allowed to make much muscular effort for some time after the complete subsidence of all local symptoms. The "wearing of an elastic stocking is recommended during convalescence, as likely to give support to the vessels and add to the comfort of the patient."

We have then, Mr. President, in postoperative femoral thrombophlebitis an unexpected and unpreventable complication to our abdominal and pelvic operations, which adds at least 3 per cent. to their morbidity. In pulmonary embolism, which seems to be equally unexpected and unpreventable, and which may in the late cases be a sequela of femoral thrombosis, we have an uncertain mortality to deal with, which, until we learn better how to prevent, will detract from our ability to prognosticate a cure, in the most simple aseptic cases even, for at least a month.

CASE I.—Mrs. W., white, aged thirty-five years, was operated on in October, 1890, for the removal of a large fibroid tumor of the uterus, by supravaginal hysterectomy. She did well for two weeks, when she began to complain of pain in the left groin and in the calf of the leg; the entire leg soon became swollen, the skin was tense and milk-white, and pitted on pressure. At first she was thought to have rheumatism. The femoral vein, upon examination, was found to be painful, hard, and the leg was colder than its fellow. A diagnosis of milk-leg was made. It was clearly a case of thrombophlebitis. The patient was free from sepsis at the time of the operation and the wound healed perfectly. The stitches were removed on the eighth day. The leg was wrapped in cotton, lightly bandaged, and slightly elevated. In a week the pain and swelling began to disappear, and in another week the patient was sitting up. She left the hospital six weeks after the operation, wearing

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an elastic stocking. She made a good recovery, and has since been well.

CASE II.—I operated on the unmarried sister of Mrs. W. also, in my hospital, for uterine fibroids. She also had left femoral thrombophlebitis coming on at the end of the second week. Her symptoms, treatment, and results were the same as in Case I. No apparent sepsis at time of operation. Perfect healing of wound, not having even a stitch-hole abscess. Both sisters were anemic from loss of blood, previous to operation, on account of their fibroid tumors which condition may have contributed to their femoral thrombosis.

CASE III.—Also a supravaginal hysterectomy for fibroids. Operated on Miss R., in January, 1897, aged twenty-nine, also in my hospital. She had the tumor removed on account of pressure symptoms and hemorrhages. The history of this case was almost a repetition of the two above described. Her convalescence was retarded at least two weeks by this complication. She has been well ever since, and complains of no trouble whatever at the present time.

CASE IV.—Was sent to me by Dr. J. R. Bromwell. Mrs. O., aged about fifty years, mother of several grown children. Removed an eight-pound uterine fibroid by supravaginal hysterectomy, in my hospital, in February, 1900. No especial difficulty was experienced during the operation, very little blood was lost, and the patient did unusually well until the fifth day, when she began to complain of unusual pains in her legs, and oppressed breathing. She wished to change her position in bed often. During a visit from her physician on same day, upon a repetition of her request, we arranged her pillows, and lifted her into a half-sitting posture, which made her feel more comfortable. She asked for a glass of milk, and while drinking it from her own hand and talking to us pleasantly, she suddenly called out to us that she could not see, and asked the doctor

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to take the half-emptied glass. We at once placed her flat in bed with her head low, thinking she was about to faint on account of the elevated position. Her mind became confused, she complained of pains in her head, difficult breathing, and choking sensations. She soon became unconscious, and her family were at once notified, and all came immediately. She did not recognize them, and died within two hours of the beginning of the attack. Nothing that we did was of the slightest benefit, and we could offer very little explanation to the shocked and sorrowing group of relatives. No postmortem was allowed. On account of the pain in her back and limbs, we arrived at the theory that a femoral thrombus was forming, and that her change from a recumbent to a half-sitting posture caused the detachment of emboli which found their way through the circulation both into the cerebral and pulmonary vessels, causing the symptoms we witnessed of cerebral and pulmonary embolism.

In pulmonary embolism alone the patient usually retains consciousness to the last.

In this case the patient was unconscious almost from the first, but as long as she was able to speak, complained of the usual symptoms of pulmonary embolism also. The progress of the patient up to the time of her seizure was as favorable as could be desired.

CASE V.—Mrs. X., wife of a farmer living in Virginia, was sent to my service in the Georgetown University Hospital on the tenth day of May, 1902, and was operated on three days later. She did well until the middle of her second week, when she developed a slight left femoral thrombophlebitis. The calf of her leg was swollen and painful, and the femoral vein could be felt under the skin about the size, length, and hardness of an ordinary lead-pencil. It was not as sensitive as the average case. Her symptoms under the usual negative treatment soon disappeared, and

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she was up and walking about the ward during her fifth week without pain or inconvenience of any kind. She was preparing to leave the hospital with her husband at the end of her sixth week, restored, as she thought, to health, and very grateful and happy.

Her bag was packed, and she was sitting on the side of her bed, laughing and joking with the other patients, eating a piece of pie as her dessert, which she held in her hand like a school-girl, when she suddenly dropped the pie, clasped her hand over her left chest, gasped for breath, and, notwithstanding all that was done for her, in less than an hour she died, with all the characteristic symptoms of pulmonary embolism. No postmortem could be obtained.

CASE VI.—Was a single lady about fifty years of age. I had operated on her twice before: once for the radical cure of coccygodinia by the removal of her coccyx, and secondly for the removal of what turned out to be a non-malignant tumor in her breast.

Later on, Dr. Halsted, of Baltimore, came over and removed the other breast for what proved to be a benign growth also.

This time her troubles were caused by a bleeding fibroid, and though she was in good flesh, she was quite pale and anemic. Her hemoglobin was so low that we would have postponed her operation until it could be improved by appropriate diet and treatment while at rest in Providence Hospital, where she had a suite of apartments and two special nurses, but for the fact that she was losing much more blood every month than she could possibly make up, on account of the irritating pressure of the fibroid tumor

On October 5, 1905, Miss E. was subjected to a supravaginal hysterectomy, which she bore very well. On the fifth day she began to have an evening rise of temperature and in the subsequent week a number of blood examinations demonstrated the presence of typhoid fever. There was

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perfect healing of the wound, and no tenderness about the stump existed, nor were there any symptoms usual in sepsis or peritonitis following hysterectomy, and there were numerous and unmistakable positive Widal tests.

During her third week in bed she developed a left femoral thrombophlebitis, which ran its usual course, and by the time the fever had disappeared her leg gave no further trouble, except to swell when she first began to sit up and walk about the room. This was corrected by the wearing of an elastic stocking. The patient left the hospital at the end of two months, and has since been well.

If ever there was a case where one might expect a pulmonary embolism, it would seem that this was the one in which it might occur. Her past history and recent illness would all suggest its possibility, if not probability. Her enforced long rest in bed may have been a blessing in disguise.

The last two cases are rather pointed illustrations of Emmet's suggestion that it is the unexpected which often happens in pelvic surgery.

Case VII was sent to me by Dr. H. H. Barker and operated on in May, 1905, in the George Washington University Hospital, for the removal of an intraligamentary ovarian cyst on one side, and an adherent pus-tube on the other. Both the cystic tumor and the pyosalpinx ruptured during their removal, and the pelvis was deluged with foul-smelling fluid and pus before the evacuation of these pus-sacs was completed. Drainage was opened up through the posterior cul-de-sac into the vagina, and several pitchers of hot salt solution was used in the washing-out process, which escaped through the vagina. As the oozing could not be arrested by ligatures, the pelvis was packed with several yards of sterile gauze, one end being brought out through the vagina, and the abdominal wound closed completely. The patient had been badly septic for two weeks preceding the operation, as shown by irregular chills, sweats,

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daily rise of temperature and pulse in the afternoon, and confinement to bed.

The gauze was ten days in all coming away. Its gradual removal was accompanied by a horrible smelling, foul discharge, and the pelvis was irrigated with hot boracic solution for another week.

We had all the causes combined present in this case for a thrombosis of any or all kinds, and we finally got it, but not until the end of the fourth week. We had preoperative and postoperative infection, we had any amount of traumatism, and we had the pressure of the gauze packing for a week, added to that of a distended sigmoid and obstructed rectum. She left the hospital in her eighth week and gradually regained her health, and has been perfectly well for the past six months, and is now.

It would be difficult to say which of the variously stated causes produced the postoperative femoral thrombophlebitis in this case.

Case VIII.—In October, 1904, I operated on Miss G. for the relief of a bound-down retroversion. The operation was a ventral suspension. The edges of the wound were held open by retractors, and the patient did well for ten days, when a left femoral thrombophlebitis developed. This was treated in the usual way for another week, after which the pain and swelling gradually disappeared in the left leg and appeared in the right. This kept her in bed for another week. She left the hospital wearing two elastic stockings at the end of her sixth week, and, so far as I know, has continued well ever since.

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POSTOPERATIVE EMBOLISM.

By Eugene Boise, M.D.,
Grand Rapids, Mich.

An embolus may be composed of air, fat, or blood coagulum, but embolism as we generally use the term refers to coagula and presupposes thrombosis. An embolus is, therefore, broadly speaking, a product of a pre-existing thrombus, and the patholoy of embolism is the pathology of thrombosis. An embolus may be so small as to give no symptoms, and thus remain unrecognized, or it may be so large as to cause almost instant death.

Thrombosis (and therefore embolism) may affect either the veins or the arteries. After operations we naturally have local thrombi because of the violence done to the walls of the bloodvessels, but thrombosis may occur at a point distant from the seat of operation. It may, and often does, occur in the right side of the heart, or in the pulmonary artery, or even, though much less frequently, in the left side of the heart or in the aortic arterial system. Also, when the operation is confined entirely to the right side of the pelvis we may have thrombosis of the left femoral vein, because of blood condition of which we shall speak later.

I will ask you to keep in mind the following facts:

1. A thrombus is a stationary, localized blood coagulum within a bloodvessel.

2. Normal blood will not coagulate in normal bloodvessels.

3. To produce a thrombus there must be a change from

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the normal either in the blood or the bloodvessels, or both.

4. Fibrin, which is the groundwork of a thrombus, does not exist in normal blood, but is the product of the reaction of fibrin-ferment or fibrinogen.

5. Fibrin-ferment is, in turn, the result of a combination of the normal calcium salts of the blood with the pathological element, nucleoproteid.

6. This nucleoproteid, according to the best authorities,[1] is produced by the degeneration of leukocytes and blood plates. Therefore, the three elements necessary to the formation of a thrombus are fibrinogen and calcium salts, which are always present in normal blood, and nucleoproteid, which is never found in normal blood.

7. There is, in normal blood, a power which enables it to neutralize or dispose of a certain amount of this nucleoproteid. It is thought that this power is derived from the endothelial cells lining the vessels. These cells are nourished by the blood circulating in the vessels and are sensitive to changes in this blood.

Those conditions of the bloodvessels predisposing or necessary to intravascular coagulation, are those which impair the integrity of these lining cells, such as

1. Traumatism (ligatures, crushing, etc.).

2. Inflammation or local septic conditions that impair the integrity of all the coats of the vessels.

3. Pressure, by which the blood flow is retarded and the nutrition of the endothelial cells is impaired.

4. Retardation of rate of flow of blood.

Haward, in his recent Hunterian lectures,[2] says, anything that retards the flow of blood through the heart or vessels predisposes to thrombosis or may even determine it, because the nutrition of the cells is thus impaired. In fact, he distinctly says:

[1] Howell's Text-book of Physiology.

[2] Lancet, March 10 and 17, 1906.

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"In most cases diminution in the velocity of the blood flow is the proximate cause of thrombosis."

Osler, as quoted by Haward, gives the history of the formation of a thrombus as follows:

"First, the impairment of the integrity of the inner coat of the vessel from whatever cause. Then the rapid collection of blood platelets at this point, where they fuse together into a granular mass. The leukocytes quickly gather and soon fibrin filaments shoot out in all directions."

Osler saw no evidence of the disintegration of leukocytes, but most investigators[1] mention disintegration of leukocytes and blood plates as the source of the nucleoproteid which is necessary to the formation of the thrombus. Any excess of this nucleoproteid, over what the blood can neutralize, renders the entire body of the blood more coagulable.

If the thrombus is not infected it may become organized into a fibrous mass, or it may gradually and harmlessly be removed by disintegration. Before either of these processes is completed a portion of the coagulum may become separated and an embolus result.

Certain morbid conditions, apart from injury to the vessels, seem to be of influence in the formation of a thrombus. As I have said, Haward lays considerable stress on retardation of the flow of blood.

Sepsis may increase coagulability, presumably by causing disintegration of leukocytes, and setting free nucleoproteid, as also by introducing foreign bodies in the guise of microorganisms.

Blood saturated with carbonic acid is much more coagulable than arterial blood. Anemia and chlorosis also are generally believed to increase coagulability.

Krehl says:[2] "From the fact that patients with chlorosis show a tendency to the formation of venous thrombi, it has

[1] Howell's Physiology.

[2] Clinical Pathology, p. 132.

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been assumed that their blood contains large amounts of fibrin-ferment, an assumption, however, which is incorrect."

Haward attempts to explain it by the statement that the increase in the number of the white corpuscles and blood platelets, together with their slow movement along the walls of the vessels "favor thrombosis." He concludes as follows:

"It would seem then that thrombosis may depend upon a variety of conditions, and is usually due to a combination of several lesions and degenerations of the vessel walls, impaired nutrition of the endothelium, retardation of the blood current, changes in the composition of the blood and in the proportions of its formed elements, the invasion of micro-organisms, any or all of these may play a part in the process, the predominant factor varying."

Haward also quotes Professor Wright and Dr. H. H. G. Knapp[1] as having proved not only that the blood of convalescents from typhoid fever is much more coagulable than normal, but that it contains twice as much lime salts, and implies that its increased coagulability is due to this fact.

All these conditions increase the coagulability of the blood and thus tend to the production of thrombi and resultant emboli.

Following abdominal and pelvic operations there are naturally thrombi in the vessels at the points of violence, from which emboli may be carried to the lungs.

In the femoral veins we also frequently find thrombi from which emboli may be detached. And it is by no means unknown that in the branches of the pulmonary artery thrombi form. Dr. G. Newton Pitt[2] found forty cases in 3218 autopsies. In fact, Playfair[3] attempted to establish it as a rule that seizures such as we generally attribute to

[1] Transactions of the Royal Medical and Chirurgical Society, vol. lxxxvi, 1903.

[2] Transactions Pathological Society of London, vol. xliv, p. 48.

[3] Ibid., vol. xviii, p. 68.

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pulmonary embolism, were due to pulmonary thrombosis if they occurred before the fifteenth day after delivery. If after the nineteenth day, they were due to embolism.

Not only do we find thrombosis of the pulmonary artery, but not infrequently we have a clot forming in the heart and extending into the artery before death. And this condition is, in the great majority of cases, on the right side, obstructing the pulmonary artery. From this portions may be broken off and carried to the lungs, causing almost instant death. Or through gradually increasing obstruction of the pulmonary artery, by enlargement of the heart-clot, death occurs, but more slowly.

We may and do find a thrombus also occasionally in the left ventricle, from which emboli may be carried to any part of the arterial system. Dr. Baldy reports a case of gangrene of the arm following an abdominal operation. Dr. Richard Smith reports a case of gangrene of the leg following an operation for appendicitis. Others have reported similar cases.

Now, in the light of the above facts, let us analyze the conditions that meet us in our abdominal work.

Numerous arrays of statistics show conclusively that of all surgical operations, those connected with the pelvis show the greatest proportion of emboli following operation, and that of these, much the greater number are after-operations for fibroids.

After all operations there is, of necessity, a thrombus or thrombi, at the points of violence to the veins. If these thrombi remain local, we need not greatly fear embolism, but if, by reason of blood conditions, or an impaired state of the walls of the veins these thrombi extend till they perhaps meet a larger vein through which the blood is flowing freely, the danger of embolism is much greater. In addition to this, if we have a weak heart, there is added a possible danger of heart-clot.

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Krehl[1] says that "marked general anemia weakens the heart, either through degeneration or malnutrition." He also says,[2] "If the ventricle is weakened it does not contract as completely as normal" (never emptying itself completely). Also "the result of weakening both ventricles is diminished arterial pressure, with increased venous pressure and diminution in the rate of blood flow."

Haward,[3] as I have shown, places marked emphasis on retardation of the blood current as a determining factor in thrombosis. But besides the weakening of the heart through general anemia and exhausting disease, we have often the added factor of the degeneration of the heart muscle which accompanies or results from uterine fibromata.

Increase of the amount of the calcium salts in the blood increases the coagulability of the blood. The relative amount of the calcium salts in the blood of patients submitting themselves for abdominal operations has never been studied, as far as I can learn, but we know the great tendency of fibroid tumors to calcareous degeneration, and it is a fair inference that in the blood of all patients suffering from uterine fibromata there is an excess of calcium salts. Moreover that this condition may readily exist in other pathological conditions may easily be inferred from the numerous instances of calcification given by Dr. Frank T. Andrews in a paper[4] read before the Chicago Gynecological Society in November, 1905.

We have, then, in many of the cases presenting themselves for operation, as conditions provocative of thrombosis and of pulmonary embolism:

1. Chronic exhausting diseases, with their resultant anemia and leukocytosis.

[1] Clinical Pathology, p. 66.
[2] Ibid., p. 71.
[3] Lancet, March 10 and 17, 1906.
[4] Surgery, Gynecology, and Obstetrics, January, 1906.

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2. A probable frequent increase of the calcium salts in the blood.

3. The presence of nucleoproteid in the blood as a result both of the increase of leukocytes and blood plates and of traumatism.

4. Degeneration of the heart muscle as a result of general chronic anemia and of fibroid tumors, with its consequent residual blood in the ventricles and retardation of the blood current.

Therefore, it can easily be understood how a thrombus may form in the pelvic veins, the pulmonary artery, the right side of the heart, the left femoral vein even as a result of an operation on the right side of the pelvis, or in the left side of the heart or somewhere in the course of the arterial system. There is, perhaps, weakness of the heart, with consequent retardation of blood flow. The blood carries an excess of calcium salts and nucleoproteid and a very slight exciting cause may be all that is needed to precipitate a thrombus. This is supplied by a localized imperfection or fault in the endothelial lining, which may be in the heart, the arteries, the femoral vein, or elsewhere. Given this, with the specified blood conditions, and the process of thrombus-formation described by Osler will take place.

The symptoms of pulmonary embolism are generally sudden in onset. They are dyspnea, pain, cyanosis, rapid, and often irregular action of the heart. They necessarily vary according to the size of the embolus. Small ones cause sudden symptoms, more or less severe, which generally pass away with but temporary disturbance. Large ones may prove so rapidly fatal as to preclude all treatment.

Inasmuch as the pulmonary artery is not the channel of nutrition of the lungs, there are no symptoms of resulting gangrene or abscess, except in septic cases.

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IS THERE ANY WAY BY WHICH WE CAN DIAGNOSE, BEFORE OPERATION, POSSIBLE THREAT OF EMBOLISM?

Mahler, in speaking of puerperal embolism, has called attention to rise in the maternal pulse as being the first sign of thrombosis.

Richter[1] thinks this was demonstrated beyond doubt in 63 per cent. of his cases. In 34 per cent. there was some doubt because of the presence of fever.

Krusen[2] has suggested an examination of the blood prior to operation, presumably with reference to excess of leukocytes and blood plates, and possibly with especial reference to an increase of calcium salts.

I would also suggest careful examination of the heart with reference to possible undue weakness. If the area of dulness is somewhat increased; if the first sound is disproportionately weak; if, after exertion, the pulse-rate is greatly increased, due allowance being made for existing anemia, and if there is a history of chronic exhausting disease, we may justly diagnose degeneration of the heart muscle, whether we detect any atheroma of the peripheral arteries or not. If in addition to this we find an excess of calcium salts, with chronic anemia, we are justified in taking all possible precautions against the occurrence of embolism.

WHAT SHALL THOSE PRECAUTIONS BE?

In all cases of chronic disease, where the indications for immediate operation are not imperative, we must give more time and attention to the preparation of our patients. We must attempt to improve the blood, increase elimination, and build up our patients in every possible way. At the

[1] Archiv. f. Gynäkologie, vol. lxxiv, No. 1.
[2] American Journal of Obstetrics, April, 1906.

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same time we may attempt to decrease the coagulability of the blood. I have mentioned that in a series of experiments on convalescents from typhoid fever, Prof. Wright and Dr. H. H. Knapp found increased coagulability with twice the normal proportion of calcium salts. They state that in a series of cases, "in all of whom the blood was found to be abnormally coagulable, it was observed that the administration of citric acid (36 grains three times a day) was followed by a decalcification of the blood and a corresponding diminution in its coagulability."

Prof. Wright has also shown that the coagulability of the blood is diminished by the ingestion of alcohol and large quantities of water.

Dr. B. W. Richardson[1] (as quoted by Haward) shows by experiment that tobacco smoking markedly decreases the coagulability of the blood. After a long day of smoking it refused to coagulate at all, when in the same patient, blood drawn in the morning, before any smoking, would coagulate in two minutes.

Haward gives the following lists of conditions influencing the coagulability of the blood, which may be somewhat helpful.

It is increased by	It is decreased by
Carbonic acid	Oxygen
Lime salts	Alcohol
Milk (because of the lime it contains)	Restriction of food
Magnesium carbonate	Diminution of lime salts
Restriction of fluids	Large quantities of fluid
	Citric acid
	Rhubarb
	Acid fruit juices
	Acid wines
	Tobacco smoking

If before or after operation it shall seem desirable to give the patient free quantities of milk, it may be decalcified, if

[1] The Cause of the Coagulation of the Blood, 1858, p.101.

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desired, by the addition of citrate of soda, 20 to 40 grains to the pint.

At the time of operation avoid all possible loss of blood. Be as gentle in the necessary manipulations as is consistent with thoroughness.

After the operation, keep "in touch" with the heart's action. Keep your patient quiet, avoiding sudden movements or movements that will put pressure on the pelvic veins. Keep the bowels well open with mild laxatives to avoid straining and use normal saline solution to dilute the blood and aid in eliminating calcium salts.

HOW EARLY SHALL THE PATIENT BE ALLOWED TO GET OUT OF BED?

Each case must be a rule to itself. Some surgeons think that where the musculature of the heart is in process of degeneration, heart-clot is more probable if the patient remains quietly in bed (though the danger of embolus may be lessened), because the contractions of the heart are less vigorous; the ventricles never completely emptied and the residual blood becomes very prone to coagulation. Also, that this danger is to a certain extent averted by the stronger and more complete contractions induced by the upright posture and physical exertion.

When pulmonary embolism occurs the most promising remedy is the free administration of oxygen, in the hope that the patient may thus be kept alive till the immediate shock has somewhat passed and the other branches of the pulmonary artery have adapted themselves to the changed conditions.

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DISCUSSION ON THE PAPERS OF DRS. JOHNSON AND BOISE.

DR. CHARLES P. NOBLE.—After what has been said, it would look as though the best thing to do for our patients is to give them a drink and let them smoke before we operate on them. (Laughter.) I may say, that many of the methods suggested by Dr. Boise I have proved in practise; that is, carefully attending to these patients through the use of saline solution, stimulants, etc.; yet I have had a large percentage of phlebitis, and I am sorry to say I have had my full share of embolism. But so far as my observation is concerned, these methods, excepting giving the patients a drink and a cigar, have not influenced the frequency of embolism.

I want to call attention to one point in a paper which Dr. Baldy read before this Society last year, on fibroids, in which he states that of nineteen patients who died suddenly after operations at his hands (see TRANSACTIONS of last year, p. 454), thirteen were cases of fibroid tumor, whereas the number of fibroid tumor cases were only three hundred and sixty-six out of a total of thirty-four hundred and thirteen. He attributes that to some influence of fibroid tumors, on the body at large. Of 7130 women operated on in the Johns Hopkins Hospital, in forty-eight phlebitis occurred: After perineorrhaphy, four times; after hysteromyomectomy and myomectomy, nineteen times; after the removal of ovarian cystoma, nine times; after hysterectomy for carcinoma, five times; after suspension of the uterus, three times; after suspensio-uteri and perineorrhaphy, four times; after hysterectomy for pelvic inflammatory disease, once, and after miscellaneous operations, three times. Of all the hysterectomies for pelvic inflammatory disease, there was but one case. In the hysterectomies and myomectomies for fibroids (727 operations) there were nineteen cases. Presumably there were more hysterectomies for pelvic inflammatory disease than for fibroids. This is quite in accord with my own experience.

As the result of my study of the subject, I have come to the conclusion that most of our knowledge has yet to be learned. I have had phlebitis of the left crural vein twice after right nephrorrhaphy. I have had it after hysterorrhaphy. I have

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had it after operations on the cervix and perineum, and the worst case I ever saw was after a hysterorrhaphy, and very few of the cases followed operation for inflammatory disease, so that it seems to me sepsis has very little to do with the question.

DR. REUBEN PETERSON.—This subject naturally interests all surgeons, and its doubtful etiology makes it doubly interesting. I think the point brought out by Dr. Johnson this morning in quoting from Dr. Kelly that we cannot promise normal convalescence in any operative case, no matter what the operation is, is well taken. My own experience and that of others support this view. Postoperative phlebitis comes on not only immediately after operation, but may appear a month or five or six weeks afterward, in cases where we least expect it.

I am particularly interested in this subject at present, because I have in the University of Michigan Hospital a patient who has an aggravated form of femoral thrombophlebitis. It appeared the third week after an operation for the removal of the appendages, while the latter were so adherent as to require removal. There was not enough sepsis connected with the case to warrant one in thinking she would have any such condition develop. But during the third week she developed thrombophlebitis of the left side, and this assumed a very severe type. The redness and swelling involved not only the femoral region, but extended also up over the buttocks.

Very soon a dark area appeared over the upper part of the left femoral and gradually a very large portion of this became necrotic. So rare in my experience was this condition that I had a picture taken so that I could present it at this meeting. You can quite readily see from the drawing that the area extends nearly across the leg. The wrinkling which you see is the outside portion of the necrotic area. The dark portion is the black slough which has not yet come away. This patient is still in the hospital; the slough has not separated, and it will be a long time before she recovers.

I have also taken the statistics of thrombophlebitis from my clinic for the last four and a half years; that is, from October, 1901, to May 15, 1906. These statistics do not include this case, because the patient has not left the hospital. They were

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surprising to me, because I thought the condition was far more common in my experience than these statistics show. Perhaps this is because these complications always come unexpectedly and invariably make a deep impression upon us. I should have said the complication was three or four times as frequent as is shown by the figures.

In making up statistics one has to consider whether he shall take the entire number of operations in the female, or confine himself to the number of patients operated on. If we take the entire number of operations, we do not get the exact percentage, but taken in another way such statistics show something because we have seen that these accidents come not only from laparotomies and the more severe abdominal operations, but they follow more simple operations, like perineorrhaphies and trachelorrhaphies. I find that in three thousand operations performed in the gynecological clinic during these four and a half years there were six cases of femoral thrombosis (not counting the case I have just reported). This would give 0.2 of 1 per cent., and taking the number of patients (1050) it would be 0.6 of 1 per cent., which differs very materially from what was stated this morning by one of the essayists in quoting Hirst, who said that postoperative thrombophlebitis was as frequent as 3 per cent. Of these cases, three came from the removal of the appendages, one only from hysterectomy for fibroid, although there have been eighty or one hundred cases in which fibroids have been removed during this period. One came from simple dilatation and curettage. In one case the record was not available. The left femoral vein was affected four times, and in one case the left groin and the right leg were affected.

As regards the time of occurrence I find in one case it occurred eleven days, in two cases fourteen days, in two cases nineteen days, and in one case twenty-one days after operation. This includes those cases in which both extremities were affected. In one case the symptoms appeared in the left leg on the eleventh day after the operation, and in another case in the right leg, nineteen days after operation. Of course, one has to consider the time in the hospital and the prolongation of the convalescence, and this I have found to be thirty-seven, thirty-nine, forty fifty-two, and one hundred and one days, respectively.

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DR. EDWARD REYNOLDS.—My observation has been that thrombosis occurs most frequently in women who have undergone operations for repair of retrodeviations of the uterus, in which there has been a great deal of congestion before operation. The statistics put forth by the Johns Hopkins Hospital two years ago showed that a much larger percentage of cases of thrombosis occurred following ventrosuspensions for retrodeviations of the uterus than from any other operation. I am inclined to think that these thromboses are more frequent now than they were a dozen or fifteen years ago, and that we are falling into the error of under-estimating the importance of congestion in the production of symptoms in cases in which there is an approach to a varicose condition in the broad ligaments. A dozen or fifteen years ago we were taught and believed that that was an important element in the production of symptoms in pelvic disease. At that period all of our patients were carefully prepared for operation by depletion. I am inclined to think that we are neglecting too much the treatment of congestion before operation and that we are getting too prone to operate on patients without previous preparation, and as a result we are getting thromboses. Speaking for myself, I am again becoming much more careful in regard to operating on these patients with congestion than I was at one time, paying particular attention to preliminary preparation by depletion beforehand.

DR. ANDREW F. CURRIER.—There is one point which I think was overlooked by Dr. Johnson in the paper which he read this morning in regard to the development of thrombosis, and that is the tendency which is apparent among certain surgeons at the present time to be in too great a hurry to get patients up and around after the performance of a serious operation. It seems to me that such a procedure is extremely irrational and unphysiological, for after the performance of a severe operation we have a condition of shock, a condition of depleted vitality, if I may use that expression, which can only be repaired by time. If for the sake of saving a few days, which is the argument put forth, the patient is allowed to get out of bed and walk about or to go home, we forget that we are exposing that patient to the risk of this condition which was the subject of discussion this morning.

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I was impressed in this connection with the remark of Dr. Edgar this morning regarding the defective involution of the abdominal muscles immediately after labor, which is more or less analogous to the condition which follows severe pelvic operations. The same reasoning which would impel us to keep a puerperal patient in bed for a reasonable length of time ought to obtain, it seems to me, after severe operations.

Notwithstanding all the information which has been given to us in these papers this afternoon, all who have read and spoken from large experience seem to be of the opinion that we are yet in the dark as to the exact cause of embolism and thrombosis. Certainly, there are numerous causes, and I have had some cases in my own experience in which I was utterly unable to ascertain any cause. Patients have had operations which have caused no particular difficulty; their convalescence has gone on satisfactorily for a few days, yet suddenly they die, and we assume that death was due to embolus, and that if an autopsy is made we might find pulmonary or cerebral hemorrhage. In view of these facts, it is therefore perfectly clear to my mind, that after an operation a patient should be given sufficient time for convalescence and for the return of the normal blood conditions before we permit her to get up and go about.

Dr. Seth C. Gordon.—Dr. Currier has stolen my thunder, but he has said what I had intended to say much better than I can. One thing that came near spoiling my coming to this meeting was a case of labor, the only case I have had the last year. It occurred in a member of one of my old families, and I could not say no. Fortunately, labor came on nine months from the day of conception, according to the testimony of the husband and wife. The woman said to me a few days before confinement: Do you adopt the new fashion of getting women up as soon as they are confined? I said, No; I have heard of that method. But, she said, that is the fashion now, and you are not in fashion unless you allow your patients to get up after confinement. I said to her: If that is the fashion, I am very glad I am old-fashioned. And that is the point I wish to make. I believe with Dr. Currier that a great many of these cases of embolism and thrombosis are due to the fact that women are allowed to get up too soon after confinement. I have never seen a sudden

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death occur after labor, but I believe this too early getting up, tends to phlebitis. I have two cases of phlebitis of the femoral vein that have occurred in my own practice within the last few months. One occurred in a comparatively young woman after an operation for appendicitis. It did not come on in consequence of her sitting up, but came on two weeks afterward. The other case occurred in a gentleman, aged sixty-nine years, who was on a trip to Mexico, and who on the first day of March was taken with cerebral hemorrhage, followed by paralysis of the left side. About eight weeks after the shock or about the first of May, he was taken with a severe phlebitis of the left leg, and is just now recovering from it. This man has arteriosclerosis, and undoubtedly it is one of those cases where the fault is in the vein itself. Whether or not the condition may have been aggravated by massage that was given him, I do not know. I believe, however, that this matter of phlebitis after labor is due in a great many instances, especially in women who are advanced in life, from allowing them too much liberty. It is also a fashion with some of our young surgeons to let their patients get up and about too early after operations. Many of them would say, "I sent one patient home in nine days, and others in less time than that." That is all wrong. We should discourage that in both young and old surgeons. I believe a patient, after an operation, needs a good deal of time to get everything adjusted to the new condition of things. Therefore, I most strongly protest against the getting up of patients and allowing them to walk about early, following operations.

Dr. Thomas J. Watkins.—There is a great deal of consolation in the possibility that these cases of thrombosis may be non-septic, but, it seems to me, the preponderance of evidence indicates that they are all due to infection. I will not discuss embolic complications, as that is another subject. As evidence of this fact: (1) Thromboses are common in cases of infectious disease irrespective of traumatism (they are common after typhoid fever); if statistics were worked up, I believe it would be shown that thrombosis is nearly as frequent after typhoid fever as it is after abdominal section. (2) Thrombosis does not occur in the non-infectious diseases.

I was interested in Dr. Clark's paper, in which he attributed

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thrombosis to traumatism of the epigastric veins, but we do not get thromboses from traumatism of these vessels from abdominal contusions. Very extensive traumatism of the veins occurs in some cases of fracture and in cases of contusions, but thrombosis, as seen postoperative, does not occur in these patients. Where there is thrombosis, as found in old varicose veins, septic symptoms, as found in postpuerperal and postoperative cases of thrombosis, do not obtain. It has been said here as evidence against infection, "The non-inflammatory cases are more liable to have thrombosis than are the septic cases." It is probable that the septic cases are more or less immune and consequently not so easily infected as the "clean cases." Another statement made as evidence that these cases are not all septic is "that thrombosis occurs without suppuration or infection." I contend that it is difficult to define what an aseptic recovery is. With our present facilities for operating, probably all of our abdominal section cases have a slight amount of bacterial invasion, and we know that even if we do not admit any bacteria through the abdominal incision, still bacteria continually invade the abdominal cavity by migration through the intestinal wall. This is proved in cases of gangrene from twisted ovarian pedicle, and it is quite probable that some cases of thrombosis are not due to infections occurring through the wound, but to infection from the migration of bacteria from the intestine. In cases of old varicose veins in the legs, we frequently see thromboses, but not with the clinical picture of the postoperative variety.

Dr. J. Montgomery Baldy.—This is a subject that has been brought before us from time to time for many years. I read a paper on it ten years ago, and since then my ideas have swerved back and forth as to the cause or causes. As one of the first or original causes of embolism or thrombosis, we suspected sepsis; then pressure from traumatism, and pressure by retractors on the pelvic veins; yet none of the explanations seemed to be sufficiently feasible to account for a large number of cases. I investigated a series of cases recently, and in my paper read before this Society last year I reported a list of sudden deaths following operation. There were nineteen sudden deaths, as if the patients had been hit with an axe. Of this number,

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thirteen occurred among the fibroid class, which were not septic cases.

The investigations made at Johns Hopkins on the same subject, revealed the presence of forty-eight cases of phlebitis. In 7130 cases there was only one that occurred in the inflammatory class. With reference to the nature of the operations performed in which thrombosis occurred, it happened "after perineorrhaphy four times; after myomectomy, nineteen times; after the removal of ovarian cystoma, nine times; after hysterectomy for carcinoma, five times; after suspension of the uterus, three times; after suspensio-uteri and perineorrhaphy, four times; after hysterectomy for pelvic inflammatory disease, once, and miscellaneous, three times." It would seem from a superficial glance at the character of the disease we are dealing with that we cannot accept the theory which Dr. Watkins has enunciated.

A fact that has appealed to me in recent years, after much thought on the subject, has been this: In an investigation I made of three thousand to four thousand surgical cases, there were nineteen deaths in a group of 366 cases of fibroid disease. This proportion of deaths draws our attention prominently to fibroid disease and an explanation is demanded. So far as I can recall, every one of these patients was a bleeder. When we take into consideration that this complication occurs in a group of fibroids (which is a bleeding disease), and think of the explanations offered by general surgeons, like Richardson, Deaver, and others, that these deaths occur prominently among bleeders, it supports the contention of Dr. Boise in regard to some blood dyscrasia.

Although I believe a certain portion of cases occur from some one of all the causes given here and elsewhere, yet I think the most potent factor lies in the direction of a blood dyscrasia, and that it is principally in this direction we must look for prevention. These cases do not occur in patients who have been up after operations, but these sudden deaths and milk-legs have occurred in patients who have never been out of bed; from the time they left the operating table they have been quietly resting in bed until attacked.

DR. LEROY BROUN.—I wish to report briefly a case of thrombosis of the subclavian artery immediately following supra-

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vaginal hysterectomy. The patient was a woman, thirty-five years old. The operation was uncomplicated. There was no extra bleeding. She was put to bed in good condition. There was, however, a small mitral regurgitant murmur, but no dilatation, nor was there any hypertrophy of the heart. As soon as the patient came from under the anesthetic she complained of pain in the right arm. On examination it was found to be white; there was no pulse perceptible at the wrist, none at the elbow or in the axilla. This was three months ago. The patient made an uninterrupted recovery, so far as the operation went. There was primary healing of the wound. There was no exudate in the pelvis. Knowing that I was coming here, and having been notified that this discussion would take place, I requested some pictures to be taken, and I have here some photographs of the arm. Lack of motion is just now developing, and the fingers stand well apart with inability to bring them together. There is impaired motion in the fingers, also impaired motion in the wrist, at the elbow, and markedly impaired motion at the shoulder. There is some ischemic paralysis.

Dr. John G. Clark.—In discussing the question of thrombophlebitis it would be wise to consider the general pathology and etiology rather than to narrow the subject to the point of attributing this complication to any one given cause. In certain classes of cases a given condition will undoubtedly predominate as the predisposing cause to thrombophlebitis. Thus, in a fibromyoma which has been accompanied by a rather prolonged bleeding, anemia would undoubtedly be the chief factor in the etiology of the thrombosis. In other cases, and indeed there are many, one could not attribute this condition to such a factor, for it is not present.

Dr. Johnson has referred to my series of cases and has alluded to the hypothesis which attributes the majority of cases of postoperative thrombophlebitis to traumatic pressure or injury of the epigastric vessels, which run parallel with the abdominal incision. This theory was forced upon me, for in a large series of cases which I reported a thrombus occurred more frequently in clean aseptic, simple abdominal operations, such as suspensio-uteri, than in septic cases. Likewise simple ovarian cysts were not infrequently followed by this sequel. In such cases the

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thrombosis, so far as the physical appearance of the patients was concerned, could not be attributed to a dyscrasia. I refer to this point merely to emphasize what I have said in the beginning relative to the necessity for the consideration of this question from the standpoint of general causes. In simple laparotomy cases I believe that the theory which attributes this complication to the traumatism of the epigastric vessels is the one which most satisfactorily explains the accident. I do not for one moment believe that sepsis plays any part in these cases, as a rule. Upon this point, therefore, I take very strong issue with Dr. Watkins, and am glad to see that Drs. Baldy, Noble, and Johnson are likewise opposed to this view. These cases are not attended by septic symptoms and are very infrequently associated with septic infections. In only a few cases of those which I reported was there any trouble whatever with the abdominal wound, and a very difficult point, I believe, to explain, if we accept the septic theory enunciated by Dr. Watkins, is that where there is extensive suppuration of the abdominal wound this complication seldom occurs. That it is in rare cases the chief factor, however, must be admitted without question.

In the study of a large series of cases we may in one case attribute the thrombosis to anemia, in another to some one of the other general causes; but in the end I believe the conclusion will be forced upon us that the chief factor in a clean abdominal case is the traumatism to deep epigastric vessels. Since I have studied this question I have not infrequently observed deep epigastric veins as large as goose-quills running underneath the peritoneum. Traumatism incident to retraction or to the placing of sutures might readily produce sufficient injury to the wall of the vein to give rise to a local thrombosis which could readily extend into the femoral vessels, and there produce such a decided whirlpool movement, with consequent slowing of the femoral blood stream, as to bring into play all of those etiological factors described by von Recklinghausen for the formation of a thrombophlebitis.

I believe the fact that these cases do not occur for from ten to sixteen days after operation is due to the slow extension of the thrombosis along the epigastric vessels until the femoral

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vessels are reached, where it produces the local symptoms. The slower the blood current the greater the danger of this complication. We may safely attribute, therefore, the greater frequency of thrombosis in the left femoral veins to the pressure of the sigmoid flexure upon the iliac vein, which naturally slows the current greater than upon the right side. In some of the infrequent cases, such as the formation of a thrombophlebitis on the left side, when a right nephrorrhaphy has been performed or after a simple incision for appendicitis, this theory will naturally not hold. These are exceptional cases, however, and in such instances we would have to fall back upon some of the general causes rather than upon the traumatic explanation.

Dr. M. Duhrssen.—I did not expect to be called upon to take part in this discussion. I have some difficulty in explaining my views in this very important matter. I believe that in most cases of embolus there is a blood dyscrasia, as already mentioned by some of the preceding speakers, and I believe that these cases of emboli have nothing whatever to do with sepsis. I have seen some cases of emboli follow hysterectomy for fibroids. These patients were very anemic and very weak, but they made good recoveries. They had no fever, but on the sixteenth or seventeenth day, when they were raised in bed, they had emboli. I recollect especially one case in which there was great mental excitement in an anemic woman, and when she raised up in bed on the seventeenth day after the hysterectomy she fell back dead. Therefore, when I saw Dr. Boldt operate on a very difficult case in New York, doing a hysterectomy for fibroids and pyosalpinx, and saw the same patient the next day walking around, I was astonished. I would not care to adopt that practice, for the reason that I would always fear emboli following such a course. I have not seen emboli very often, but in most cases the patients are very anemic, and in some of them there is great mental excitement. In one case I lost the patient through fear of suffering from my removing the sutures.

Dr. George M. Edebohls.—My own experience with thrombosis following operative work embraces ten cases observed during the past sixteen years. The first point I desire to make is this, that femoral thrombosis follows operations other than those performed upon the pelvic viscera or external

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genitalia. Dr. Noble has already told you that he has had two cases following nephropexy. I have had two cases of *left* femoral thrombosis following *right* nephropexy, where the operation was completely aseptic, and the wounds healed primarily throughout. Of my ten cases, nine were on the left, and only one on the right side. Of the ten cases, not one was septic either at the time of operation or during the progress of the case subsequent to operation. There was full primary healing of the operative wounds in every case. These facts are not readily reconcilable with either of two theories, that of interference with the epigastric vein, and that of sepsis, advanced to explain the causation of femoral thrombosis after operation. In all of my cases the thrombosis occurred between the eleventh and nineteenth days after operation, while the patients were still in bed.

Dr. Richard R. Smith.—I wish to report a case of thrombosis of the left leg following an operation for appendicitis. The healing of the wound was perfect. There was no pus at the time of operation. The patient, however, had a stormy convalescence and became very weak; the pulse became rapid as well as weak. He went along for two weeks, then suddenly developed a thrombosis of the left femoral artery. The man recovered with the loss of his leg, however, above the knee. Examination of the heart was made daily before the occurrence of the accident, as well as afterward, without finding anything that would give us a clue as to the cause of the same.

Dr. Richard C. Norris.—From our experience I think we must conclude that there are many factors in the production of thrombosis, and that each individual's experience being necessarily rather limited, we will find that phlebitis is due to various causes.

I wish to call attention to a case of thrombosis in the left leg following an Alexander operation, in all probability due to the traumatism of a retractor. So far as I know, no one has discussed the cause of thrombosis following Alexander's operation. In this case, on the left side there was some difficulty in finding the round ligament, consequently the retractor was used more freely and frequently than is customary.

As bearing upon traumatism as an etiological factor, I would call attention to several cases of mild phlebitis I have observed

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in the abdominal wall which, I believe, followed the Credé method of placental expression, and I believe if obstetricians were to observe the abdominal walls of their patients, they would not infrequently find a small vein thrombosed; being covered by the binder and pad it is overlooked.

There are undoubtedly cases of embolism produced independ ently of traumatism. I have the records of two severe cases of thrombosis of the left femoral vein occurring during pregnancy, and scarcely a year goes by at the Preston Retreat that I do not have a case of inflamed varicose veins of the leg. We must conclude that there are many factors which bring about this condition, as emphasized by Dr. Boise, and that the etiology of its occurrence after operations for fibroid tumors cannot apply to other cases.

As to the relation of this condition to the early getting up of patients, I would like to mention the records of the Preston Retreat again. During the service of Dr. Goodell, which covered a period of seventeen years, it was his custom, as the older members of the Society will recall, to get women up early after confinement, in order that better drainage of the lochial discharge might be afforded. When I took charge of the Preston Retreat—and the practice of Goodell was followed by Price—adjacent to each bed was a commode. It was then the custom to have women get out of bed on the fifth or sixth day after confinement to use the commode. A careful search of the records, which comprise approximately eight thousand deliveries, could find no sudden death following this custom, and the records of my own institution are against the early getting up as being an important etiological factor in puerperal cases. The more we study this affection, the more mysterious it is. The progress of some cases after the occurrence of thrombosis is also mysterious. In the older books the records of suppurations of the thigh, followed by recovery, were not uncommon, and the method proposed of injecting turpentine in order to favor localization of the infection may have some value.

I believe that local suppuration or a general infection will be determined by the blood condition of the patient, and the character of the infecting organism. I am sorry to record that before leaving home the first death occurring in my private obstetric

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practice in fifteen years from any cause was due to phlebitis. The patient died two months after her delivery. After her apparent recovery from phlebitis of the left leg, there appeared over the right hip-joint an erysipelatous area, which was followed by skin eruptions, profound sepsis, and death. Streptococci were found in the blood.

In conversation with a professional friend, who has been interested in blood examinations of cases thought to be rheumatism, he told me that in recent years he has found that very many so-called cases of acute inflammatory rheumatism are in reality streptococcal infections with joint manifestations. He has abandoned the use of the salicylates and the uric acid theory in a certain percentage of such cases, and has been treating them with serum. My patient's history was that, when she was two months pregnant, she was treated in Paris for inflammatory rheumatism with high fever and marked joint symptoms. She returned to this country, and was treated for a similar condition at Atlantic City, and while under my care two months prior to her delivery I gave her aspirin and antirheumatic remedies for joint symptoms, with apparent benefit. Associated with her phlebitis, she had pain and swelling of the wrists, and redness and swelling of the ankle-joints. I mention this case because it may, possibly, throw some light on the clinical history of some fatal cases. A quiescent blood infection antedating delivery will find the thrombus of phlebitis a ready means of intensifying itself so rapidly that the patient cannot survive.

Dr. Henry P. Newman.—In discussing this subject I think we should bear in mind that infection is only a relative term, its interpretation depending in a great degree upon such considerations as the susceptibility of the patient to trauma and the condition of his blood and tissues. As Dr. Watkins has intimated, we cannot say with certainty in any case that there is absolutely no bacterial invasion even if there are apparent no direct manifestations of infection. You will pardon me if I illustrate with a chapter from experience. As some of you will remember I was present at the Atlantic City meeting of the American Medical Association two weeks after undergoing appendectomy at the hands of one of the most experienced and painstaking surgeons in the West. It was a simple catarrhal

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appendix with slight adhesions and a sharp kink which had caused attacks of colic. There was no difficulty whatever attending the operation, and ordinarily recovery would have been prompt and complete, and I looked for nothing but benefit from my trip to Atlantic City. The abdominal wound had healed perfectly and without incident, but my general condition was somewhat below par and the tissues consequently susceptible. I was hardly aboard the train before temperature, pain, and swelling announced the development of a phlebitis of the right limb, severe enough to trouble me for a year and a half. This seems to me to instance very clearly the contention that, while trauma is undoubtedly a factor in these, the susceptibility of weakened tissue, a condition of lowered vitality lessening resistance, renders many liable to a degree of invasion that most constitutions are proof against. There can be no such thing as sterile surgery, and notwithstanding the practical immunity from infection by modern aseptic methods we have still and we may continue to count upon the menace of the occasional germ.

Dr. Johnson.—So many of the Fellows have spoken on this subject, that it will be impossible for me to take up the points made by each speaker, and as no one has taken any exception to what I have said, there is very little left for me to say. The point in regard to too early getting up made by Dr. Currier was a good one. About a month ago, while in New York City, I was asked by Dr. Boldt to see him operate for the removal of a fibroid tumor. He told me that he expected to have the patient walking about in the afternoon; if not, the next day. That statement nearly took my breath away. He said that was his custom. I told him that I was writing a paper on this subject and was looking up the causes for the occurrence of thrombosis and embolism following gynecological operations; that I had an idea that many cases were caused by the too early getting up of patients, by too much moving around in bed, or by too much manipulation on the part of the surgeon. He said that he had been getting nearly all his patients up within a week after operations, and many of them within three or four days, some of them within two days, and yet he had never attributed thrombosis to this cause. That adds another mystery to the subject.

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DR. BOISE.—I have very little to add. We are all pretty well convinced at present that we do not know what the cause of thrombosis is, but I think we can say as regards the cases that have been reported that it is not always due to sepsis. Sepsis may be an important causal factor in certain cases, but it does not enter into every case. Nor can we say that it is due to an extension from the epigastric vein, because the condition occurs many times in cases where these veins have not been disturbed. We see operations done on the right side of the pelvis where the left side is not disturbed, yet thrombosis of the left femoral vein will occur. We are obliged to admit or to come to the conclusion that there are several factors entering into the different cases of thrombosis, and that we cannot attribute all cases to any one factor or series of factors. I believe that blood conditions or dyscrasiæ are the most constant factors of all.

Speaking about thrombosis following typhoid fever, it has been shown by experiments that in the early stages of typhoid fever the blood is less coagulable than normal. In the convalescent stage it is twice as coagulable as normal, and there is twice the normal amount of calcium salts in the blood.

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ARTIFICIAL DILATATION OF THE CERVIX AND OS UTERI—INDICATION AND METHODS.

By George Tucker Harrison, M.D.,
New York.

As indications for the artificial dilatation of the cervix may be cited in the first instance *local morbid conditions*, which have interfered to such an extent with the dilatability of the os uteri and cervix that the natural forces are inadequate to the end to be attained. In addition, *direct danger* to *mother* and *child* may furnish an indication for the artificial dilatation of the cervix, a danger only to be averted by a speedy delivery of the child. Of the local diseases are especially those which make a rigid unyielding condition of the cervix to be maintained as demanding actual intervention in the interests of both mother and child; such as chronic inflammation, syphilitic induration, carcinoma or hypertrophy of the infravaginal and supravaginal portions of the cervix. As demanding a speedy delivery may be mentioned eclampsia, prolapse of the umbilical cord, placenta previa portialis, asphyxia of the fetus and beginning sapremia intoxication, consequently a dead fetus or retention of placental parts. Furthermore, the premature detachment of the placenta attended by internal or external hemorrhage is a grave and dangerous accident that demands a prompt delivery. Again, the artificial dilatation is indicated when in an obstetric operation (forceps, version, perforation) the passage of the head (or breech) meets with difficulty in consequence of insufficiently dilated os uteri. Finally, an indication is furnished in cases of transverse presentation

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with premature rupture of the membranes, version according to Braxton Hicks' method is not yet possible, and also in certain cases of narrow pelvis, with the head at the brim, in order to make the prophylactic version. The dangers imminent here are enormous distention of the lower uterine segment on the one hand, and asphyxia of the fetus on the other.

With reference to methods. 1. Incision of the os uteri (hysterostomatotomy): An indication for the incision of the os uteri is given, when immediate delivery is a matter of paramount importance, the os uteri not being sufficiently dilated; the cervical canal, on the contrary, unfolded. The deep incisions of the cervix, usually combined with deep vaginal and perineal incisions open up a wider field of operative intervention. The advantages offered by his procedure, Dührssen (*Archiv. f. Gyn.*, Band xliv, p. 642) declares to be the following; in the deep cervical incisions, in combination with a perineal or vaginal-perineal incision and in the vaginal-perineal incision alone, we possess a method which removes the resistance of the defectively opened soft parts of the parturient canal. This method in correct execution by a skilled obstetrician, and application of all the rules of antisepsis is free from danger in all cases, supposing that no infection of the parturient woman has taken place.

By the application of the cervical incisions we are consequently able to avoid perforation of the living child or waiting until the spontaneous death of the child, or even the Cesarean section and artificial premature birth in all the cases in which the obstacle to birth is essentially caused by the insufficiently opened vaginal portion of the cervix. The single indication for the deep cervix and vaginal-perineal incisions is presented when danger arises for mother and child, and this chiefly occurs in eclampsia, in premature rupture of the membranes and in old primipara. The extraction follows closely on the incisions.

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With reference to the conditions necessary for the success of the operation, supposing no obstacles exist on the part of the pelvis or on the part of the child, the necessary postulate is that the supravaginal portion of the cervix should be completely dilated.

TECHNIQUE OF CERVICAL INCISIONS. As main dangers of the Dührssen method have been mentioned, infection, hemorrhage, and further laceration of the incised wounds. The mechanical obtuse dilatation of the cervical canal and external os uteri may be effected by distention with the fetal body, especially after bringing down a foot.

2. By the hand.

3. By the use of expanding foreign bodies.

Tents (laminaria and tupelo), dilators, iodoform gauze, rubber bags, or balloons. Range of application of the laminaria tent limited; may come into play in the introduction of an artificial abortion in an incomplete abortion and as a means of preparation for other methods when an artificial premature birth is designed.

Iodoform gauze, not so much used as formerly, but not to be used in cases in which the mother's life is in jeopardy on account of pathological conditions and a speedy delivery is required.

DILATATION BY DILATORS OF HARD RUBBER OR METAL. Bossi's dilator has come into use of late years, and while it has found enthusiastic advocates in some quarters, it has been condemned in others in the most unqualified terms. One of its advocates, Wyder, maintains that this instrument is called upon to occupy a blissful sphere of activity, in those cases, *but only in those cases*, in which a quite urgent indication exerts for the speediest delivery chiefly in the interest of the mother. The cases demanding its use would be mainly eclampsia, premature detachment of the normally situated placenta with internal hemorrhage of a dangerous degree, severe disturbances of the circulatory and respiratory appa-

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ratus, grave symptoms of existing infection, cases in which it would have to enter into competition with vaginal or abdominal Cesarean section. It is not to be denied, however, that a large number of observations have shown, that in spite of careful and skilful application of the Bossi instrument, weighty disadvantages are connected with this mode of dilatation. First among these are laceration of the lower uterine segment, of a greater or less degree, which frequently appeared in spite of accurate control of the finger and which not infrequently assumed larger dimensions, although originally of an insignificant nature, under the influence of the efforts put forth to effect delivery. This method has further been held responsible for severe hemorrhages and also has been said to increase the risk of active postpartum hemorrhage. Another disadvantage is the danger of septic infection, according to the opinions of some authorities. Again, different cases occur in the literature in which a spastic contracture of the os uteri offered considerable difficulties in the extraction of the preceding or after-coming head. Says Schaute,[1] "Trials of this procedure at my clinic, that in careful application it does not act more quickly than metreurysis, on the contrary, has as a consequence deep cervical lacerations, wherefor I no longer use it in my clinic."

The effect of the balloon of Champetier de Ribes (or one of its modifications) is threefold. (1) It makes uterine contraction. (2) Its action is analogous to the bag of waters and dilates according to the physical laws of hydrostatic pressure. (3) It acts as a tampon.

Enumeration of some of the conditions in which this method of dilatation is indicated. When an artificial abortion or premature birth is demanded this method of dilatation is invaluable. In pathological conditions which make it a matter of paramount importance to accelerate the

[1] Lehrbuch der Gesamt. Gyn., driete aufl., jste Teil.

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course of birth, the application of metreurysis is indicated. As such may be cited eclampsia, nephritis, premature rupture of the membranes with its consequences, faulty presentations of the child, prolapse of the cord, prolapse of the arm, placenta previa, etc.

As the last methods of dilating the cervix must be mentioned Dührssen's vaginal Cesarean section is undoubtedly *one* of the most valuable acquisitions of modern times and greatly enlarges our therapeutic resources. Bumm says, in reference to this operable procedure: "The value of the operation and the advance which is united with its introduction into obstetrics lies in this, that it places us in the position, without loss of time in each moment of pregnancy and childbirth, to open the womb, in a surgically exact way, as wide as is necessary for delivery by the natural parturient canal. Not one of all the methods of dilatation standing at our command, up to the present day, is competent to perform anything similar when the collum is not at all dilated or only slightly so."

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MANUAL DILATATION OF THE CERVIX OF THE GRAVID UTERUS.

By Philander A. Harris, M.D.,
Paterson, N. J.

For a year and a half I have, for elective delivery, dilated all parturient uteri with a uterine dilator which I will show you, and which measures the force applied to the cervical ring. I have also used this dilator to enlarge the cervix in almost every operation for incomplete abortion and for curettement.

I had not gone very far in the employment of this dynamometric dilator for general use, until I found that the cervices of uteri which were gravid, or which had recently been gravid, possessed the quality of dilatability in a very far greater degree than the cervices of uteri which were not gravid or which had not recently been gravid. As I proceeded farther in the employment of this force-measuring dilator, I not only became assured of the correctness of earlier impressions, but I found that most uteri which were not gravid, and had not been so for a year or longer, had little or none of the quality of dilatability. In most of these a strain of twenty to thirty-five pounds upon the cervix effected comparatively little or no enlargement of the cervical ring, even when maintained for fifteen minutes or more.

Occasionally a non-gravid cervix would slightly lacerate under this heavy strain, but it would not dilate; so I am now inclined to believe that most uteri which have not been gravid within six months or a year, enlarge so *slowly* under a heavy tonic strain that they should be classed as undilatable. If

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my assertions in this connection are confirmed by others, then the term "dilatation of the cervix," as we have applied it to this class of cases, is largely a misnomer, and we may henceforth have to admit that many of our so-called rapid dilatations of the cervix in the non-gravid were but lacerations or divulsions.

So differently does the gravid and non-gravid cervix uteri ordinarily behave when subjected to the strain of a dynamometric dilator, that the experienced operator can shortly judge whether the uterus is or has recently been the seat of pregnancy. From experience thus gained I am convinced that any gravid uterus which is not cancerous, which is free from a neoplasm or an excess of white fibrous tissue, can in an average time of one hour or less be safely dilated to a size which will allow the head of the fetus or child to escape, whether the gestation has advanced far enough for the child to be viable or not.

When the uterus becomes gravid, certain changes occur in it; nature begins to prepare the cervix for its task. One of these tasks is to close distinctly the doorway from the uterus to the outside world; but while it thus guards the doorway, it prepares the gates to open the right of way to the fetus or child, when transit becomes necessary. This latter quality of dilatation of the cervix of the gravid uterus is the particular physiological item to which I would direct your special attention. This quality is exactly what we should have expected of nature.

If these assertions regarding the ordinary behavior of the gravid and parturient uterus are correct—and I feel sure you must all be inclined to believe that they are—then it becomes our duty to take advantage of our knowledge in this relation, and when nature fails to dilate the cervix, or is not ready to act when action is required, we should avail ourselves of those means which are sufficient, and to which nature has naturally prepared the cervix to yield.

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In speaking of manual dilatation of the cervix for obstetric purposes, I wish to be distinctly understood as referring to a method which I have employed for the past twenty-two years, and I would exclude other manual methods, unless such methods are as safe, as rapid, and as certain in effect as that which I have used.

The method of effecting manual dilatation which I have employed was first publicly described by me in a paper read at the Pan-American Medical Congress in 1893.

Undoubtedly as a result of an imperfect description of my technique, comparatively few physicians familiarized themselves with the method. A few are known by me to have clearly understood the method, and to have since employed it. By its employment, they have so much success in dilating the cervix, that I do not now find them grouped among the class of obstetricians who are still looking for some safe and sure method of quickly effecting elective delivery.

By the method which I have employed I am convinced that a far greater tonic strain can be applied upon the musculature of the cervical ring than by any other manual method. I am also convinced that it is far less fatiguing than other manual methods. This method relies mainly upon the flexor muscles of the fingers and thumb. These are by far the strongest of the hand, and therefore best fitted to exert and sustain powerful tonic strain.

The growth of cancer in the cervix renders it undilatable. A cervix which has been partly cut away, amputated, and sewed or re-sewed, may contain so much white fibrous tissue that it is rendered undilatable. These are conditions which I would especially mention as liable to render either physiological, manual, or instrumental dilatation a failure. For such cases incision by knife or scissors alone will succeed in opening the downward right of way for the birth of the child.

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I believe that the average time required to dilate safely and manually the cervical ring to a circumference of eleven or twelve should be forty-five minutes, provided the first finger can be easily introduced into the cervix to the metacarpophalangeal knuckle at the beginning of manual dilatation.

If the cervix is not effaced, a metallic dilator or rubber bag is required to dilate it sufficiently to allow the full introduction of the index finger. In such cases I believe that the average time of ninety minutes would be necessary to dilate safely the cervical ring to a circumference of eleven or twelve. Rubber bags and balloons are too slow and too uncertain in their action to be used in operation.

The surgeon whose hand is weak or crippled will dilate the cervical ring very imperfectly, if at all. A vagina which will not permit of the introduction of the entire hand contraindicates the employment of this method. The hand itself while in action occupies a perfectly passive position in the vagina. The fingers which effect the dilatation neither push the uterus particularly upward, nor do they draw it downward. In about one hundred manual dilatations I have never accidentally ruptured the membranes while effecting dilatation.

Non-effacement of the cervix is not a contraindication to manual dilatation, provided the operator has an instrument to make the cervix large enough for the vagina. The very greatest force is required in the beginning of dilatation. As the cervical rings grows larger, less and less force is required. The operator should constantly study the advancement of time, exercising much patience while performing this task. The tendency is to hurry, and consequently to exert too much force, whereby laceration and consequently unnecessary bleeding may occur.

The special advantage in knowing a good method to dilate manually the cervix is, that the operator always has his hands

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with him, and if they are strong ones, he will scarcely ever fail to dilate the cervix if he properly employs them.

The disadvantages of the method are, the fatigue incident to the task, the frequent changing of hands from left to right, and from right to left, and the liability of carrying septic matter into the uterus.

Now and then the vagina of a primipara but six and a half or seven months advanced in gestation will be found too small to admit the hand without laceration of the perineum and possibly the vagina. I have met with two such cases.

The chief items in the technique of manual dilatation, as I employ it, are about as follows:

General and complete anesthesia.

Washing the rectum until the reflow is quite clear.

Washing and sterilization of the field of operation and its outlying borders.

If the cervix is not effaced, it is dilated with a Goodell or other steel dilator until it admits the first finger and the tip of the thumb.

A rubber glove is placed upon one hand, and sterile soapsuds poured upon it as a lubricant.

An assistant or nurse presses a folded napkin upon the perineum between the vagina and anus. This napkin should not be pressed upon the anus. It should be held against and across the perineum so that it will hang loosely from that point, and form an apron to cover the rectum, so that any evacuation of the rectum during operation will fall downward, away from the vagina.

Introduce the hand in the vagina.

Introduce the tips of the index finger and thumb into the cervix.

With the tip of the thumb and finger within the cervical ring, the index finger is flexed, while the thumb is extended upon it.

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Very hard and long-continued flexure of the index finger and extension of the thumb are required to carry forth dilatation. I do not think that the index finger and thumb of the strongest hand can exert sufficient pressure to lacerate the cervix at this stage, so that the operator may now, without fear of lacerating the cervix, exert as heavy a tonic strain upon the cervical ring as the strength of his hand is capable of effecting.

When the first hand fatigues, it is withdrawn for rest. The other hand is gloved, soaped, introduced, and the tonic strain on the cervical ring renewed. When the second hand fatigues, it is withdrawn, and the first hand covered with a freshly sterilized glove and reintroduced.

In a space of time varying from five to twenty minutes or longer, the cervix will be found to have yielded sufficiently to permit of the introduction of the tips of *two* fingers and the thumb.

In the employment of two fingers and the thumb, two distinct maneuvers are possible, and they are of about equal value.

One of these movements consists in flexing the two fingers, while the thumb is extended and resting upon the index finger.

The other consists in holding the first finger in a partly extended position upon the end of the straightened position while the flexure of the second finger exerts strain upon the cervical ring. The natural limit of dilatation with two fingers and thumb is about six inches.

When the cervix will admit the tips of three fingers and the thumb, the flexure of the second finger receives the uterine ring at one side, while the first finger held in partial extension on the tip of the thumb, or the thumb resting upon the first finger, furnishes a plain or sulcus to receive the other side of the cervical ring. The natural limit of dilatation with three fingers and the thumb is a little over seven inches.

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When the cervical ring is enlarged to admit the tip of three fingers and the thumb, any fairly strong hand can exert sufficient power to tear most uteri. Consequently, as dilatation advances, the operator with a strong hand must not exert nearly all the force at his command.

Having enlarged the ring as much as possible with the thumb and three fingers, all fingers and the thumb are now introduced within the cervical ring. The flexure of the little, ring, and middle finger now exerts a strain upon one side of the cervical ring, while the first finger held in extension upon the tip of the thumb affords a plain upon which the other side of the cervical ring is held. The limit of enlargement in this position of the hand is from nine to ten inches.

Further dilatation of the cervical ring is easy, and naturally effected by expanding the fist in such manner as to balance the uterine ring upon its outer planes and sulci.

When the hand is now withdrawn from the uterus, the bag of waters follows, helping to fill the vagina. It should, of course, not be broken until the operator has decided whether he will deliver head or feet first. If version is required, he must not rupture the membranes until he is in every way prepared to effect the version. When the cervix is believed to have dilated sufficiently to offer no particular impediment to the transit of the larger diameter of the child, anæsthesia is withdrawn, but the strain upon the cervix continued. So soon as sensibility begins to return the membranes are broken, and the child immediately turned, unless it has been decided to allow the presenting parts to engage and come first. As the patient recovers from the anesthesia, uterine contractions and labor pains will assist, if they do not, almost unaided, expel the child and other uterine contents.

The hand in effecting dilatation does not push the uterus upward, nor does it pull it particularly downward.

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Sterile soapsuds are the lubricant which I prefer and generally employ.

Just before the uterus is fully dilated, the anesthetic is withdrawn, in order that the patient may have uterine contractions and pains to expel the child.

Spasmodic jerks or momentary outthrusts of digital strength should be avoided.

A clean sterile glove should be placed on the hand as often as it is introduced. When the tonic strain upon the cervical ring is being properly exerted, the fist of the working hand itself occupies a perfectly passive position in the cervix.

In purely elective delivery the average time for performing manual dilatation of the cervix should be fifty minutes.

Some cervices can be dilated to a circumference of ten or twelve inches in twenty or thirty minutes, while others will require an hour and a half. If at any stage in the task of dilatation the operator finds the cervical ring suddenly yielding, he is entitled to the presumption that he has unintentionally lacerated it.

When the cervix is fully dilated the bag of membranes pouches from the cervix when the hand is withdrawn from the vagina.

Normal salt solution should be frequently poured over the vulva and the introduced hand. Gravity flow will carry everything downward and away from the vagina.

As equable a strain as possible is used until three fingers can be introduced. After that a tonic strain with gradually diminishing force must be maintained.

When all the fingers and thumb can be introduced, any strong hand is capable of exerting too much and possibly dangerous force.

The operator should maintain a strong but tonic strain and watch the clock, not for the purpose of seeing how quickly the work can be completed, but rather to lead to

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the exertion of less force, and consequently more tardiness in effecting dilatation.

DILATATION OF THE CERVIX UTERI WITH THE DYNAMOMETRIC DILATOR.

Two years ago I presented to this Society, at its meeting in Boston, the first model of an obstetrical dilator. Since then I have used the dilator not only for obstetrical purposes, but for dilating the cervix in almost all cases of incomplete abortion, and also of ordinary curettement. Although the dilator has been altered, it contains nothing which was not in mind when the instrument was last shown you. Very much use of the instrument has led to the elimination of defects in the earlier designs, and I now feel that it possesses much value.

The instrument is provided with two pairs of detachable terminals, a large and a small. Either pair may be used to begin the dilatation when the cervix is not already effaced. The instrument is provided with a strong spring, which is compressed with a finger-nut, and through which resistance is transmitted to the levers and their uterine terminals. A dial at the proximal end of the instrument registers in pounds the amount of strain exerted on the cervical ring. This dial has a double register. The longer finger, terminating at the outer circle, records the strain thrown upon the *detachable* terminals, while the shorter finger, terminating at the inner circle, registers the strain upon the cervix when the instrument is used without the detachable terminals.

So far as I know, this is the first uterine dilator to be provided with a dynamometer. To distinguish it from dilators which *do not* measure the strain exerted, I have termed it a dynamometric dilator.

By means of a finger-screw to the right of the proximal end of the instrument, any strain from one to thirty-five

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pounds can be transmitted through the spring and levers to the cervical ring. The resistance of so powerful a spring in compression would make the instrument a most dangerous one, were it not provided with means whereby the natural recoil of the spring in the event of beginning laceration or divulsion of the cervix is prevented.

This contingency has been provided for by the addition of a safety-nut. By keeping the safety-nut in proper position, the recoil of the spring is arrested in the event of either tearing or too rapid dilatation. In other words, when *necessary* or when *important*, the safety-nut instantly disenergizes the instrument, so that extensive tearing or divulsion should not result from a careful use of the instrument.

In order that the amount of dilatation acquired by either the ordinary terminals or the detachable terminals may be known to the operator, the instrument is provided with a double mensurating register. From this register the operator may read the exact circumference of the lumen of the os or cervix uteri up to nine inches. To effect a greater dilatation, the two additional blades are inserted, and the terminals separated by means of a thumb-screw. The employment of four instead of two levers does not impair the dynamometric quality of the instrument. It registers the strain upon the cervical ring quite as accurately when four levers are employed for dilatation as when only two are in action.

Unlike most other uterine dilators, this instrument is made up of many distinct and detachable parts, and at operation the parts are introduced piecemeal, or the instrument is built up, as it were in the uterus. By such construction, the terminals or blades many be introduced in much smaller lumen than instruments which are permanently fixed at their fulcri. When the blades of my instrument are placed within the uterus, they form either two or four substantial concavities, from which the cervical ring is not

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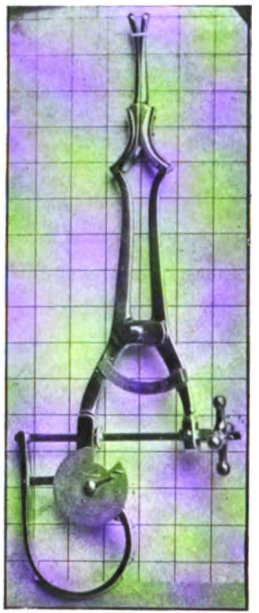

FIG. 1.—Shows the author's dilator, with the extension or detachable terminals attached to the ordinary terminals. (The vertical and horizontal lines which appear in these figures are one inch apart, and are intended to afford the reader an opportunity of measuring the length and breadth of the instrument, or any part of it).

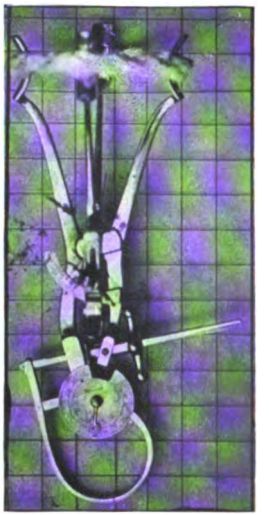

FIG. 2.—Shows all four levers in position for the extreme limit of dilatation. A soft rope riding in the concavities of the terminals indicates the relation of the cervical ring to the levers or blades of the instrument. Upon these four levers the cervical ring may be dilated to a circumference of twelve inches.

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much inclined to escape in either an upward or downward direction. Dilatation is always started upon the terminals of the two blades.

When the lumen of the cervix has attained a circumference of five or six inches, it is recommended that the two supplementary blades be added. From that time the uterine ring is, of course, dilated by the employment of four instead of two terminals, and the uterine ring assumes a quadrangular form. When only two blades are introduced, it, of course, assumes a rectangular form.

The patient is placed upon her back, with the buttocks slightly overhanging the delivery-table, and the knees flexed upon the abdomen; the perineum is depressed with a Sims speculum; the cervix drawn down to view with a hook or volsella forceps, and the left or dial blade introduced. Having placed its terminal into the uterus to the hilt, the right blade is introduced and set upon its fulcrum. The long bolt is then passed through the proximal end of the dial blade, the safety-nut is spun part way down it, the point of the bolt is passed through the oscillating cylinder of the right blade, while the left end of the bolt is caught upon the spring. The four-knobbed finger-nut is then screwed down upon the oscillating cylinder of the right blade. Force is thus exerted upon this spring and the strain is transmitted to the terminals within the cervical ring. The dial will now show the number of pounds of strain upon the cervical ring, while on the crescent may be read the circumferential measurement of the lumen of the cervical ring.

If the cervix is not effaced, the large pair of dilatable terminals can, after the seventh month, generally be introduced without trouble. If the cervix will not admit the larger, detachable terminals may be used instead. It must be understood that all dilatations are performed under complete general anæsthesia.

After the seventh month, and until term, I have generally

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found that a strain of at least twenty pounds is required to begin and carry forward dilatation of the uneffaced cervix. If with the first tests of ten or fifteen pounds the ring is found to be yielding, no greater force should be required. If within five minutes neither the register of inches nor the register of pounds indicates any dilatation, five pounds more should be tried for four or five minutes. If the cervix does not slightly but steadily dilate with that strain, the force may be increased by five pounds. It must be remembered, however, that whether much or little force is being applied, the safety, or disenergizing, nut must constantly be kept very closely to, but not against the left or dial blade of the instrument.

As the cervical ring dilates, the safety-nut must be steadily unscrewed. If attention is not paid to this safety-nut, and it becomes entrapped upon the dial blade, it will at once arrest the spring, and the strain upon the cervix will be incidentally less, and in a few minutes be reduced to zero.

As stated above, when the effaced cervix has attained a circumference of five and a half to seven inches, both blades of the instrument should be removed from the patient, the detachable terminals abandoned, and the instrument reintroduced in such manner that the cervical ring will ride upon its ordinary terminals. The long compression-bolt with its safety-nut is reset, and the force reapplied by means of this four-knobbed finger-nut. When the register upon the crescent indicates a circumference of eight inches or possibly nine inches, according to the width of the pelvis, introduce the two supplementary blades, and tighten them with their short bolt and the thumb-screw. At this point I generally unscrew the four-knobbed finger-bolt, and tighten the thumb-nut of the shorter bolt, which corrects the short levers. In so doing, however, it must be remembered that the finger of the dial must at no time be allowed to run back to zero. If a strain of at least a few pounds is not maintained on the cervical ring, there is some liability of

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disengaging the instrument from the cervical ring. The detachable terminals have a slight pelvic curve, but these are the only parts of the levers which have a curve to adapt it to the form of the pelvis. My first instrument was made without a pelvic curve, and I found that a pelvic curve is not at all necessary, except when the detachable terminals are employed. In using a straight dilator one has but to press down slightly against the perineum, and to push the instrument slightly upward to avoid dislodgement of the cervical ring from the tips of the terminals.

The instrument need not be removed and reintroduced, unless the cervix is so small when beginning dilatation that the detachable terminals are required. In this event the two blades must of course be withdrawn for the purpose of reintroduction without the detachable terminals.

ADVANTAGES. Some of the advantages of dilatation as accomplished by this instrument are as follows:

It is not fatiguing to the operator.

It affords any degree of strain upon the cervix which may be desired.

It is provided with a dynamometer which shows not only the number of pounds pressure which is being exerted upon the cervical ring, but it also shows whether the ring is dilating under the pressure.

The instrument has a safety device whereby the instrument is disenergized the moment either too rapid dilatation or laceration occurs. Extensive laceration cannot occur if the instrument is properly used.

Serious lacerations should not happen, except in the hands of impatient and unskiful operators.

The instrument is made of steel, and can be sterilized.

A pregnant woman in any stage of gestation may be placed upon the operating-table, and an elective delivery effected in an hour or so without any previous preparation.

DISADVANTAGES. No one should use it who has not previously well studied its behavior.

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ADVANTAGES OF THE BIMANUAL DILATATION OF THE PREGNANT AND PARTURIENT UTERUS.

By J. Clifton Edgar, M.D.,
New York.

I PREFACE my remarks with the statement that every day, every hour, we recede from the preparatory stage, and the actual onset of labor itself, the difficulty of any method of rapid dilatation by stretching of the pregnant uterus will increase. Hence dilatation by incision may be demanded when immediate delivery is called for, by reason of the absence of the preparatory softening and effacement of the cervix, rendering cutting a safer procedure than dilating or stretching.

Having in mind the pregnant uterus of the last third of gestation, and the cervix of the preparatory stage of labor, which latter antedates the real onset by about ten days, and those emergencies of obstetrical practice demanding immediate delivery, my experience has taught me that stretching of the cervical sphincter is feasible and safe in most instances and is to be preferred to methods of incision, and that incision of the cervix for purposes of dilatation is rarely called for. I base this statement upon sixteen years' close study of the action of the cervix during and previous to labor, and experience with various methods of cervical dilatation. These sixteen years include clinical observations in five maternity services, in two of which I am at present serving, namely, the Bellevue and Manhattan Maternity.

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I have tried to avoid prejudice in my attitude toward old and new obstetrical procedures. As regards new ones, I experiment with them all, and adopt what appears to me to be the best. Like many other operators I began artificial cervical dilatation with graduated metal dilators and Barnes' and Champetier de Ribes' hydrostatic bags, together with superficial and deep cervical incisions. The method of dilatation by one hand, so graphically described by our fellow-member, Dr. P. A. Harris, in 1893, I have given conscientious trial, but my experience and that of others lead me to the conclusion that a method of dilatation by the use of the fingers of both hands gives far better results. While I only published this method in November, 1896, the hospital records of my cases show that I had been dilating the cervix by the bimanual method in cases of eclampsia, placenta prævia and delayed labor, at least four years prior to 1896. To accomplish rapid delivery we have today vaginal and suprapubic Cesarean section, incision and mechanical dilatation of the cervix. They all have their place in appropriate cases.

Clinically, I am accustomed to divide all cases calling for rapid delivery into (1) those in which the supravaginal cervix is dilated and drawn up into the lower uterine segment, the defective dilatation being confined mostly to the external os, and (2) those in which the cervix is unchanged and no preliminary dilatation has taken place. In the first instance I can hardly conceive of a condition calling for incision of the uterus for purposes of dilatation, as skilful bimanual stretching will fulfil every requirement. The most difficult cases for artificial dilatation are those in which the cervix is unchanged and no preliminary dilatation has begun.

Previous to the introduction of the Bossi type of metal dilator I incised a number of these cervices by both superficial and deep incisions. Since its introduction I have cut very few cervices. I consider the Bossi dilator a valuable

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addition to our resources, and its use justifiable along the lines in a moment to be suggested. It is in the difficult class with unchanged cervices, the internal os being still present, that I have found the Bossi dilator an invaluable aid to the subsequent bimanual dilatation of the cervix. In these cases it secures the preliminary dilatation of the cervix, it softens the cervix, it excites the uterus to contract and draw up the internal os, thus converting the difficult class into the one appropriate for the use of manual dilatation (Fig. 1).

My experience has taught me to reject the Bossi dilator as a means to complete dilatation. The instrument and its modifications are not shaped for the *dilating* cervix, the ends of the blades cannot be controlled, and I have seen serious lacerations result from the use of the instrument in the last stages of dilatation. Theoretically, the dilating part of the instrument remains applied to the ring of the cervix; clinically, it is apt to slip over the rim of the cervix and injure the uterine wall above, or vaginal below (Fig. 1, A and B). Zweifel has observed four serious lacerations and one complete uterine rupture from its use.

The obstetrical surgeon who throws doubt on the possibilities and success of mechanical effacement of the cervix has not had sufficient experience with methods of dilatation. Only recently a gynecologist, one of the most enthusiastic advocates of vaginal Cesarean section, told me in conversation that he did not recognize any special technique in mechanical dilatation of the pregnant or parturient uterus, and this gentleman has many times described to us the minute technique of mechanical dilatation of the non-pregnant uterus. An important advantage of manual dilatation of the uterus is, that it at the same time dilates the vagina in preparation for the subsequent passage of the fetus. This cannot be said of the vaginal Cesarean section or of incision of the cervix.

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Vaginal Cesarean section, while it certainly is a competitor with mechanical dilatation in certain cases, must be used with care, and is only applicable in a relatively small proportion of cases. Much has been said of the danger of extensive lacerations involved in the operation of mechanical effacement of the cervix. I have in my fifteen years' experience with bimanual dilatation had one complete rupture of the uterus, this in a case of placenta previa. My records show that in not more than three cases was it deemed necessary to suture the cervix subsequent to the dilatation.

Vaginal Cesarean section is still in its infancy and although in the cases reported few complications are cited, still if the cases are not properly selected, serious outcomes are sure to result. Take a case with a fetal head floating above the brim and the cervix high in the pelvis and you will find that the separation and stripping back of the bladder and the incision of the cervix and anterior uterine wall will carry with them serious hemorrhage, and if a version is demanded, there are risks of uncontrollable extension of the uterine incision, to say nothing of difficulties in the extraction of the after-coming head, by reason of the undilated vagina. Incisions in the uterus may extend during the subsequent delivery of the fetus. In the TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY for 1895 will be found a photograph of a uterus from one of my cases of eclampsia treated in Bellevue Hospital by deep incision of the cervix up to the uterovaginal junction, after the method recommended by Dührssen. Four incisions were made in this instance, and the fetus weighing seven and a quarter pounds delivered by version and extraction, both arms going above the head. In this case the left lateral incision, although originally made completely up to the uterovaginal junction as the specimen showed, extended to twice its original length up the lateral uterine wall.

I will cite one case only to illustrate my method of procedure:

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Mrs. J. H., aged twenty-seven years; primipara; eighth month of gestation; I saw in consultation with Dr. Charles Henry Moak, of New York City, on the night of February 14, 1905. Mrs. H. had had five eclamptic convulsions during the afternoon and evening of the day I saw her, and while I was making a vaginal examination to determine the condition of the cervix a sixth convulsion occurred, and while preparations were being made for operation two more convulsions took place in spite of chloroform, making eight eclamptic attacks in all.

There was no attempt at cervical dilatation and no effacement of the vaginal cervix; the internal os just admitted the index finger and had resisted attempts at dilatation with the fingers on the part of Dr. Moak before my arrival.

Commencing with the Bossi dilator, at first without the movable guards because the os would not admit them, and subsequently with them, I stretched the cervical canal for ten or fifteen minutes, by the end of which time I could introduce the index and second fingers of each hand into the os. Carefully continuing with bimanual dilatation, I obtained complete effacement of the rim of the cervix and delivered by direct podalic version and extraction in less than an hour. No unusual lacerations were produced. A living child was obtained and the mother made good a recovery. The ninth and last convulsion took place shortly after delivery.

Surely here was a case in which something more than dilatation by stretching would seem to be indicated. A primipara, at the thirty-sixth week, with no effacement of the vaginal cervix and practically no dilatation of the os. This case would fall in the vaginal Cesarean section class of many operators. Indeed, by reason of the five rapidly succeeding convulsions, Dr. Moak called me in consultation with something more radical than dilatation in view, and yet dilatation by stretching with the combined use of the Bossi dilator and the bimanual method sufficed.

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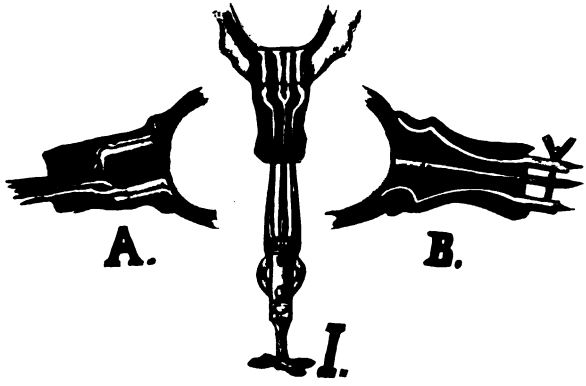

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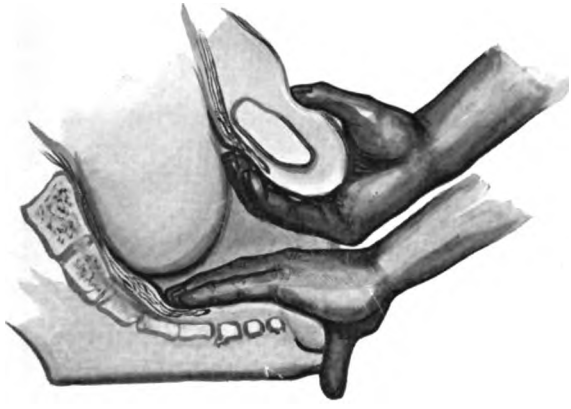

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OPERATION. My method of procedure is as follows: After the usual preparation of the patient, and placing her in the lithotomy position at the edge of the table, I pass the index finger of the left hand into the os and hooking the distal phalanx within the internal or external os, as the case may be, I draw the whole cervix forward and a little downward against the posterior pubic wall and fix it there. I then insert the right index finger along the dorsum of the left using the latter as a guide (Fig. 2). A sterile towel drawn tightly over and stitched to the perineum and pinned to the sheet covering the table on either side, will prevent contact of the lower fingers with the anus.

Where much difficulty is experienced in inserting the second finger I immediately resort to a preliminary dilatation with the Bossi dilator, enough to allow the introducing of the two indices into the cervical canal. This is so much a routine with me now that the Bossi dilator is always boiled as a preparation for delivery of eclamptic and placenta prævia cases at the Manhattan Maternity and my Bellevue service, and I am accustomed to carry it with me to such cases seen in consultation.

The two index fingers being now introduced, dilatation is secured by them and successive fingers as they are introduced, by pressure in opposite directions, by a kind of eccentric massage, the fingers of opposite hands making gentle and steady pressure downward and outward in opposite directions; first anteroposteriorly, then laterally and obliquely, the points at which pressure is exerted being constantly changed so that all portions of the cervical ring are subjected to it. After the four fingers of each hand have been introduced some little time must be spent in producing complete relaxation, effacement and paralysis of the resisting external cervical ring, so that no difficulty shall be encountered from obstruction here during the extraction of the child (Fig. 3).

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In the class of cases in which much resistance is encountered by reason of the non-disappearance of the supravaginal cervix, and in which time does not permit of the preliminary use of diastatic bags to excite the uterus to draw up the internal os, I have found an invaluable aid in the metal dilator of Bossi. I find that ten or fifteen minutes' use of this instrument in such cases sets up uterine action and consequent drawing up of the internal os, also causes softening of both rings of the cervix, and relaxes them sufficiently to permit of a subsequent safe and rapid manual dilatation. I never use the Bossi dilator to complete the effacement of the cervix, as by so doing I believe we run great risk, but only as a preliminary and preparatory procedure, believing the fingers to be safer and more closely imitative of nature's method of dilatation, and more under the control of the operator (Fig. 1, A and B).

I have every confidence in the efficacy and safety of bimanual stretching of the cervical ring as a means of dilatation when carefully and skilfully performed. Further, my experience leads me to strongly advocate the use of the two hands for cervical dilatation along the lines already suggested. It is a significant fact that in my sixteen years' experience in five maternity hospitals I have yet to meet an interne who, having tried the two methods of cervical dilatation, namely, with one hand and two hands, did not finally adopt the method requiring the use of the fingers of both hands, and for the following reasons:

1. The bimanual method is a closer imitation of the natural process than any other method of manual dilatation, being in this respect analogous to the bag of membranes or the hydrostatic bag, because the force used for dilating the cervical ring is directed from above downward (Fig 2).

2. Far greater force can be brought to bear upon the cervical ring, if need be, by the bimanual method than by any other, because the fingers of both hands are brought into

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play, and the stronger flexor muscles of the fingers and hand are the ones made use of.

3. There is no danger of prematurely rupturing the membranes, as there is when the fingers of one hand are passed through the cervix (Fig. 2, C and D).

4. There is no interference with the original presentation or position, since the finger-ends closely hug the lateral uterine wall; this cannot be said of any other manual method of dilatation, nor even by hydrostatic bags.

5. The bimanual method is far less fatiguing than any other method, because the strain is distributed in both hands; and the sense of touch of the operator's fingers is unimpaired, as there is no constriction of the hands as there is when one hand is used.

6. The amount of force exerted can be better estimated with two than with one hand, hence the danger of laceration is lessened.

7. In placenta previa there is less separation of the placenta with the bimanual method than when the fingers of one hand are thrust through the ring of the os (Fig. 2, C and D).

8. The bimanual method can be performed while a part of the fetus, as a leg or after-coming head, already occupies the vagina. This advantage applies to no other method of manual dilatation and is in my opinion its greatest recommendation.

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VAGINAL CESAREAN SECTION.

By Professor Dührssen,
Berlin, Germany.

You have already heard such admirable papers on vaginal Cesarean section read by Drs. Stamm, Fry, of Washington, De Lee, of Chicago, and others in your medical societies, that I may restrict myself to a few special points met with in my own experience and in that of other gynecologists, especially as I have dealt with the whole subject thoroughly in the recent text-book of von Winckel.

As far as the *name* is concerned, I myself have pointed out[1] that (although I did not know it till a few years ago) the name was used by Lauverjat in the eighteenth century. Thereupon van de Poll[2] went so far as to explain that Lauverjat had invented the operation, to which I had given the name of vaginal Cesarean section. I can assure you that I had not read Lauverjat's work before 1906, when, after reading van de Poll's paper, I borrowed the book from the Royal Library in Berlin. Besides, it only follows from van de Poll's quotations from Lauverjat's book, that Lauverjat denoted *simply incisions in the margin of the os uteri* by the above mentioned name, and that he recommended it in cases of imperfect dilatation of the os, but not of the whole cervix. The name "vaginal Cesarean section" is old, but the operation itself is new.[3] Also, as Stamm, of Fremont, Ohio[4], has described in detail, Acconci has no claim to the authorship of the operation, which I described first in the year 1895 in the form of "Anterior vaginal hysterotomy."

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In the year 1896 I carried it out successfully for mother and child in the form of anterior and posterior vaginal hysterotomy, and indeed also successfully in this sense, that the patient was delivered of a living child some years later by the help of metreurysis.

By means of vaginal Cesarean section and Gigli's hebotomy, a problem of centuries has been solved; namely, the problem of how, without danger, to deliver the mother of a living child, in the presence of obstructions, through the soft and bony parts of the generative passage, since neither of these operations has the dangers of the classical Cesarean section nor of symphysiotomy. Both operations can be combined in one case, as, for instance, in the case of a patient with contracted pelvis, who is attacked with eclampsia before the dilatation of the os. The extremely simple subcutaneous hebotomy is first performed, and then the vaginal Cesarean section. In this way Henckel (*Centralblatt f. Gynäkologie,* 1906) operated successfully on a case of placenta previa with contracted pelvis. The combined operation is simpler and less dangerous than the classical Cesarean section, because in it (not to mention the fear of infection present in any intraperitoneal operation) there is always the danger of the uterus tearing in subsequent deliveries. This danger is excluded in vaginal Cesarean section. As a proof of this assertion, I can lay three photographs here before you, which show that the scar after a vaginal Cesarean section is hardly visible. I had the opportunity of taking these photographs at a subsequent anterior colpoceliotomy.

Also, the eleven deliveries observed after vaginal Cesarean section contributed by Dührssen, Wennerström, Jerie, Stamm, Rühl, Liepmann (two cases observed by von Bardeleben), Westphal (*Centralblatt f. Gynaekologie,* 1906) ran an easy course, with one exception, which I will deal with later.

The fear of the disturbances in labor, as Findley, of Chicago, expresses it, is therefore without foundation. The

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remaining exceptions of this author, also, are not well founded.

I offer the following statements in rebuttal to his:

1. The delivery can be terminated in five minutes by the vaginal Cesarean section.

2. The asepsis by the vaginal Cesarean section can be brought about in just as exact a manner as by the classical method.

3. The incisions of the vaginal Cesarean section do not tear further if the technique is carried out properly.

4. In only few instances is sterilization desirable. The uterus can be removed through the vagina after a vaginal Cesarean section as quickly as after an abdominal Cesarean section.

5. With the proper technique, the child is not any more endangered by the vaginal Cesarean section than by the classical method.

In regard to the *technique* of the operation—the details of which I presume are well known—the following points are of the greatest importance.

The removing of obstructions on the part of a narrow and rigid vagina by means of a vaginoperineal incision, which I first employed in 1887. The essence of this operation is the division of the levator ani. This auxiliary incision, in obstetrics as well as in gynecology (here especially for the vaginal extirpation of a carcinomatous uterus), is wrongly attributed to Schuchardt. I recommended it (also for the extirpation of carcinomatous uterus) three years before Schuchardt. In any case, as preparation for the vaginal Cesarean section, the vaginal canal must be split to the extent of allowing the introduction of a powerful man's fist. The opening in the lower segment of the uterus must be enlarged to the same extent, and from this follows, in the case of full-time children, *the necessity of splitting the anterior wall of the uterus.*

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It is, then, not necessary to draw down the upper part of the uterus with forceps, and by this troublesome operation run the risk of injuring the uterus or opening the peritoneum. By simple traction on the portio vaginalis one can survey for a distance of 6 cm. the whole region of the anterior and posterior walls which has to be incised. Besides, the incision of the anterior wall of uterus alone (the hysterotomia vaginalis anterior, as Bumm calls it) is not an invention of Bumm, as some authors say, but only a modification of my method. I recommended theoretically the hysterotomia vaginalis anterior in 1895, and performed it in a case of eclampsia in 1900, *i. e.*, two years before the first of Bumm's publications on vaginal Cesarean section. In the case of full-time and especially of large children it gives however, in my opinion, no sufficient dilatation for an easy extraction.

Thirdly, the operation of delivery must be performed by turning, not by forceps. If you go by these rules of mine, turning and extraction is as easy as the extraction of the child in the classical Cesarean section. It is not right, therefore, to call vaginal Cesarean section an accouchement forcé. Rather should we consider it, as von Winckel has done in his handbook, along with the classical Cesarean section and Porro's operation. In the above mentioned handbook the three operations are described in the chapter called "Extraction of the Child through an Artificial Opening." Even when there is an overextension of the lower uterine segments, turning is easy and without danger—as I observed it in a case of contracted pelvis—because by the double incision the dangerous tension of the lower uterine segment will be fully removed.

The *indications for vaginal Cesarean section* may be summed up as follows: Vaginal Cesarean section is indicated when, in the case of an imperfectly dilated cervix which will not permit of dilatation by gentler means, the life of the

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mother or the child is brought into danger. Also, the presence of an operator experienced in vaginal gynecological operations is required. The imperfect dilatation of the cervix can be caused by pathological changes in the neighborhood of the lower uterine segment, or danger to the mother and child may arise when the pains have as yet caused no sufficient opening of the os. In the first the case is that of an absolute, and in the second that of a relative, obstruction to delivery. The first must be removed because it will lead to danger for the mother and child; in the second, the danger is already present, and requires the immediate emptying of the uterus.

Among the special indications I next mention that of eclampsia. I first established the principle that on account of the undependable nature of eclampsia it was best, as soon as the diagnosis was established, to empty the uterus in brief but deep narcosis. The investigations of the last few years which have recognized eclampsia as an intoxication produced by pregnancy have shown that I was right, and proved that my demand was well established not only by its therapeutic success, but also on theoretical principles. I should like to urge that these theoretical investigations give us a reason for not confining ourselves to single convulsions for the diagnosis of eclampsia; rather that we should form a diagnosis of a serious intoxication of the whole organism; for instance, in presence of coma without convulsions, or increasing eye symptoms or blindness, even with maintained consciousness and without convulsions. In these cases we must also undertake a rapid delivery. Even if we consider such cases as severe nephritis, and not as eclampsia without convulsions, their treatment is the same. I have, for instance, also performed vaginal Cesarean section in a case where, obviously, the dislocation of a floating kidney caused by the pregnant uterus, and the consequent stoppage of the ureter, produced renal

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colic and albuminuria, and where, by reason of a scar of the internal os, metreurysis proved a failure.

In premature separation of a normally situated placenta, vaginal Cesarean section is, as every one knows, the recognized operation. In placenta previa, it is true, metreurysis with Champetier de Ribes' bag is also a very good plan; still, consideration should be given to a case observed by Bumm, in which fatal hemorrhage took place during the insertion of the bag.

On the other hand, the uterus wound, in vaginal Cesarean section, with placenta previa does not bleed more than usual. I therefore incline, in placenta previa, to empty the uterus by incision, as was first recommended in America, and only recommend vaginal instead of the classical Cesarean section.

In any case, vaginal Cesarean section might be recommended for placenta prævia, where the cervix does not possess the sufficient dilatation and dilatability for the performance of metreurysis, or where, as, for instance, in the case of an old primipara or a full-term child, a great deal depends on the saving of the child.

Once I performed vaginal Cesarean section in a case of severe hemorrhages, which were caused by missed abortion, with seven months' retention of the dead fetus. In spite of tamponade of the uterus and the employment of laminaria, the rigid cervix was not dilated, and the very severe pains produced by this means could not detach the firmly adherent placenta. After incision of the anterior wall of the cervix, it was easily possible to detach the mole with two fingers. In the mole there was still the mummified fœtus.

Through vaginal Cesarean section, the classical operation on the dying has, according to my view, lost its right to existence. The first should be performed at once, and by this promptitude the mother may often be saved, while

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in the classical Cesarean section the waiting on unmistakable signs of approaching death often causes the loss of the child's life.

Vaginal Cesarean section will further limit another method of mine, *i. e.*, deep incisions which I recommended in cases of imperfect dilatation of the vaginal part of the cervix. Lack of success with this method has frightened many away from it, and has driven them to use Bossi's instrument, but the mishaps are caused by want of attention to the rules I have given in detail, particularly that of carrying four incisions as far as the insertion of the vagina to the cervix. Any one who is afraid of these four incisions tearing farther can turn with safety to the vaginal Cesarean section. With a dilated supravaginal part of the cervix it is extremely easy to proceed as follows: The posterior lip should be first split, if it can be reached, and then the anterior, in a sagittal direction. This last cut should be continued up to the anterior fornix, and then by means of a small speculum, or simply by pressure of the fingers, the anterior uterine wall can be exposed for a distance of some centimeters and split. If the head is fixed the forceps can be used; if movable, it is better to turn.

The danger of vaginal Cesarean section is not greater than that of any other obstetrical operation. Indeed, I believe I may safely assert that it is less than that of a forceps, or a perforation operation in cases of imperfectly dilated soft parts. In these operations a great many injuries take place from tearing and crushing, which have a greater disposition towards septic or pyemic infection than the smooth incision wounds of the vaginal Cesarean section, and leave unpleasant scars behind. If you look at the narrow scars on the anterior and posterior lip in Fig. 5, you will confess that many a normal delivery leaves much greater deformities of the portio vaginalis. When I keep before me all the advantages of vaginal

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Cesarean section, I see (in hospital practice) the opportunities of application of mechanical dilation becoming fewer.

Bossi's method I repudiate entirely. In cases of closed cervix it is dangerous, and in cases of dilatation of the supravaginal part of the cervix it is unnecessary, because delivery can be more rapidly performed by deep cervical incisions or by vaginal Cesarean section. Bossi's method leads not only directly, but indirectly, to tears which may be dangerous to life, for Staude[5] reports a case lately, in which, after application of the Bossi, the scars led, in the next labor, to a fatal rupture of the uterus.

One of the nine deliveries after vaginal Cesarean section demonstrated its superiority over the Bossi method and the metreurysis. In this case, Rühl[6] performed vaginal Cesarean section on the 21st of January, 1904, on account of fever, and because the rigid cervix would admit only one finger, and was not dilated by eight hours' metreurysis with self-acting traction. In the next delivery, in 1905, the cervix was again dilated very slowly. Finally Bossi's instrument was used, when the cervix admitted three fingers. But already, after a dilatation of 8 cm., a violent hemorrhage occurred, which could only be stopped by turning and extraction. The head was, however, retained and could only be extracted by means of incisions in the cervix, which was drawn down into the vulva. Tamponade of the uterus; recovery; child living.

As the author rightly remarks, the rigidity which required vaginal Cesarean section in the first delivery was present also in the second delivery, so that the second difficult delivery is not regarded as a consequence of the vaginal Cesarean section. Rühl would have done better in this case if he had repeated the vaginal Cesarean section. Finally, the delivery had to be effected by incisions in the cervix, while the Bossi method was a complete failure.

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Metreurysis, which since 1803 I have popularized in Germany, is an excellent and safe method, looked at only from the point of view of dilatation. This is so only in cases when one can wait a few hours for the delivery, and when the constant self-acting traction advised by me is practised, and in cases where no essential pathological changes in the cervix are present. Its danger, however, lies in the introduction of a foreign body, and Döderlein called attention to this at the congress of the German Gynecological Society at Kiel in 1905. He says: "It becomes covered with germs in a few hours, and thus becomes an incubator for micro-organisms, which become dangerous when pathogenic micro-organisms are found among them, or when this septic focus is allowed to remain in position a long time."

I also have observed slight rises of temperature in metreurysis, as well as the discharge of a bad-smelling ichorous fluid on removing the bag, although the cases were treated in my hospital with all aseptic precautions. It is therefore a question whether one should expose women to this danger in a hospital or not, rather than perform vaginal Cesarean section.

For the general practitioner, however, metreurysis is a priceless method, and if a doctor has no Champetier de Ribes bag in his instrumentarium already, I advise him to procure one immediately, and to make room for it by removing Bossi's instrument.

A method of mechanical dilatation which is good, and also easy of application for the general practitioner, may be used in the first seven months of pregnancy and in cases in which there is no hurry. It consists in tightly plugging the whole uterovaginal canal, as has also been described by me. The cavity of the uterus is plugged with iodoform gauze and the upper half of the vagina with salicylic wool. To strengthen the action, a laminaria tent can be inserted in the cervix. The action is sometimes so explosive that in from

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twelve to twenty-four hours the whole contents of the uterus will be ejected as far as the vulva, and at any rate the cervical canal will be so dilated in this time that the uterus can be comfortably emptied.

Since 1892 I have had various tin boxes manufactured for the different kinds of plugging material. Most German obstetricians have Dührssen's germ-free boxes (Nos. 1 and 2) in their midwifery bags. For subsequent plugging after vaginal Cesarean section, box No. 1 is absolutely necessary. To be sure, we can decrease the frequency of atonic hemorrhage if we inject ergotine before the beginning of the operation.

Modern obstetrics does not claim from the doctor that he shall, in the first place, save the mother and then the child, but rather both. I stood out for this in the first edition of my *Obstetrical Vade Mecum* (1890), and I am glad to be able to show that Dr. Brothers'[7] (New York) prize essay, which appeared in 1896, is written in the same spirit.

Nowadays it is not justifiable to let a child die because the soft parts of the generative passage are not sufficiently dilated for its extraction, nor indeed to use forcible extraction, for, in consequence, the child often enough dies, or is badly injured for its after-life, and further, the mother runs the risk of dangerous lacerations of the uterus and vagina.

Further, it is not justifiable to undertake the delivery of a woman with a normal or only slightly contracted pelvis by means of perforation of a live child, or by the classical Cesarean section, because the cervix is imperfectly dilated.

In all these cases vaginal Cesarean section can take the place of simply waiting, or of rougher and more dangerous methods, or of the conscious destruction of a being capable of life.

I have collected 376 cases of vaginal Cesarean sections with 48 deaths (12.7 per cent.) This high mortality is not

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due to the dangers of the operation, but to the serious diseases on account of which the operation was undertaken. This proves the fact that the greater operation, namely, the radical vaginal Cesarean section, has a lower mortality than the conservative vaginal Cesarean section. Of 53 cases of extirpations of the uterus after vaginal Cesarean section—this combination of operations I name radical vaginal Cesarean section—only 5 died (9.4 per cent.). This further proves the low mortality of the conservative vaginal Cesarean section in clinics, where immediate deliveries in cases of eclampsia have been effected according to my teachings and directions. Veit, for instance, had only 1 death in 33 cases; Bumm, only 1 death in his last 40 cases; as Bumm's assistant, Dr. Liepmann,[8] kindly told me.

My own statistics strengthen the principle, that cases of death occur, not because of, but in spite of vaginal Cesarean section. I have to complain of 2 deaths in 12 cases of vaginal Cesarean section. One was a woman moribund with heart disease. She died immediately on the uterus being emptied. The other was a case of eclampsia with pulmonary tuberculosis; she was first cured of the eclampsia, the wound healed perfectly, and the uterus was completely involuted, but she died in four weeks of tuberculous pneumonia.

American obstetricians have taken up the idea of vaginal Cesarean section with that open receptivity for every advance which characterizes the American people. I feel bound to express my warmest thanks to my colleagues who, through their operations and their literary ability, have done the work of pioneers in this country, especially to Drs. Stamm, of Freemont, Ohio; Bacon, of Chicago; Miller, of New Orleans; Peterson, of Ann Arbor; Fry, of Washington; Goffe, of New York; De Lee, of Chicago. Not only my thanks are due to them, however, but the thanks of the whole world, and of generations yet to come.

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DISCUSSION ON THE PAPERS OF DRS. HARRISON, HARRIS, EDGAR AND DUHRSSEN.

DR. RALPH H. POMEROY (by invitation).—I wish to thank you very much for the opportunity of demonstrating by means of diagrams what I think is an entirely new form of hydrodynamic apparatus for dilatation of the cervix. Every man hopes that his child is a genius, and I hope that this apparatus of mine will help to solve certain problems that are yet unsolved in obstetrical practice. All of the hydrostatic bags that have been so far used have purely the effect of foreign bodies introduced into the lower segment of the uterus on which a small amount of traction can be applied, and they are actually of very little efficacy in their dilating effect. If such a bag is left in place for a long period, it induces the risk of sepsis that has been referred to. It may accomplish a certain amount of softening of the lower uterine segment, but it has no dilating force. Neither the Voorhees bag, the Champetier-de-Ribes bag, nor fiddle-bags have any such effect. The fiddle-bag is imperfect, in that it slips up and down. I have been working on a double compartment bag, a preliminary report of which I presented before the Kings County Medical Society in October, 1904, and subsequently to the Brooklyn Gynecological Society, in March of this present year. While I cannot say it is entirely

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complete, I think it is sufficiently so for the purpose of demonstration of a new principle of mechanical dilatation of the cervix.

This bag, which I show in its elementary form (illustrating), is constructed in two compartments, the upper one of which is inflatable through the tube that passes through the lower. This is introduced through a one-finger dilatation. We all know that any condition of the cervix from the seventh or eighth month of pregnancy can be dilated to that extent either with the finger or with the branched dilators, with practically entire safety. This bag, entirely collapsed, is introduced with the ordinary Champetier de Ribes forceps, and is passed in until the upper compartment is above the point of tightest constriction. The forceps are then unlocked and the upper compartment is inflated by a bulb syringe (the ordinary fashioned Davidson syringe) until resistance is felt. The forceps are then removed. The inflated upper compartment becomes thus an anchor and a measure of the first stage of the dilatation. This bag being in place, and anchored in the fashion I show you above the point of constriction, the lower bag is then gradually and slowly inflated with the same syringe. As a mechanical fact, that bag must expand until the whole apparatus slips out of the uterus. The dilatation effect is inevitable. The process of dilatation is carefully and slowly effected, the time being at the discretion of the operator. Perhaps the longest time I have found necessary, even in an unobliterated cervix, so that the dilatation was an inch and a half in diameter, was fifteen or twenty minutes with the patient under the influence of an anesthetic. The expanded apparatus slips down into the vagina and is removed. The large size apparatus is then introduced, remembering that we have already accomplished an actual dilatation of the cervix to one and a half inches. This bag is constructed on exactly the same principle, but with an upper compartment of about three and a half inches in diameter, equivalent to the size of the fetal head, and with a lower compartment curved in adaptation to the birth canal.

The physiological effect of the expansion of the full size apparatus is really remarkable. As soon as the vagina becomes distended, if the patient is only partially under an anesthetic, she actively bears down, strains in the effort to expel the lower

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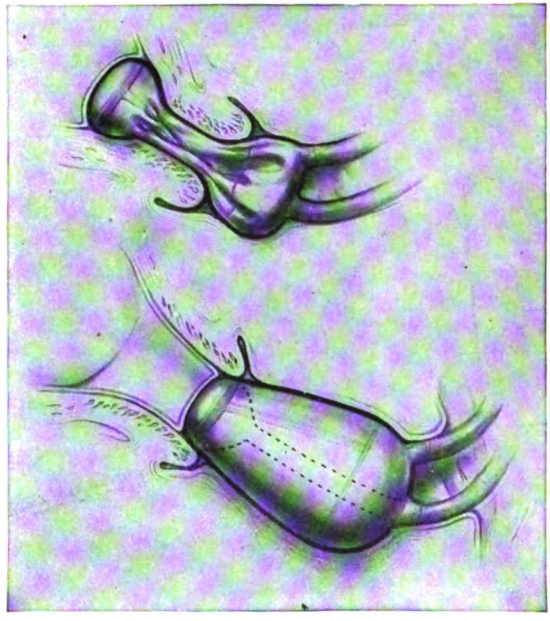

Fig. 1

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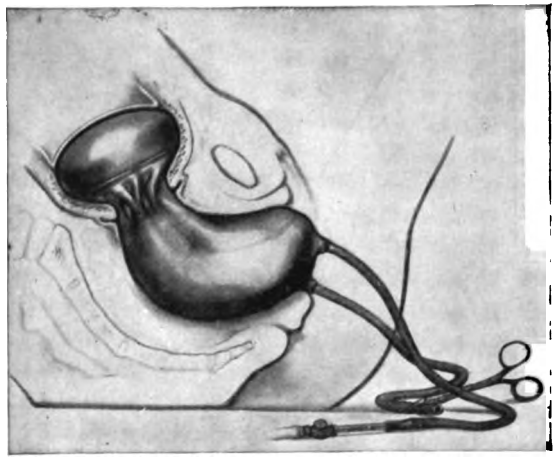

FIG. 2

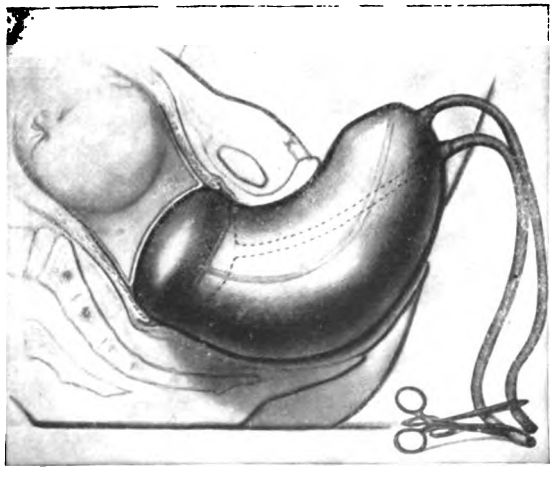

FIG. 3

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bag, dragging on the upper compartment in conjunction with the positive dilating effect of the apparatus itself, actually pulls the upper bag through the cervix.

I have successfully carried out this method of dilatation in seven cases of eclampsia and one of placenta previa centralis, some of them as early as the seventh or eight month, and have been able to effect delivery immediately by version. The only accident I have had in the development of this matter was with the first bag constructed. That bag was not safe. My first idea was to have the lower compartment short, making its expansion entirely within the vagina; but a seven and a half months eclampsia case in which I endeavored to effect dilatation showed that this was a defect in the plan of the lower bag. In inflating, this bag forced itself above the brim, and the lower compartment caused a rupture into the bladder. The patient was successfully delivered, recovered from eclampsia, and the bladder was sutured later without her suffering any permanent damage. That was the occasion of the development of the curved bag shown here. I have tried to work this matter out, so that dilatation can be accomplished with two sizes of bags, a small one with an inch and a half top, which can be put through a finger size cervical canal, and a larger one accomplishing full dilatation. Both bags can be introduced without any instrument or fingers going above the cervix, and without specula in the vagina. It may be necessary in introducing the first bag, or in making the preliminary one-finger dilatation, to put tenacula on the cervix and pull it down. So far as possible, however, the use of tenacula should be avoided.

DR. EDGAR.—I would like to ask whether it is necessary to have more than one-sized bag?

DR. POMEROY.—I have made one special apparatus much longer for those cases in which the lower portion of the uterus is not developed, so that you can get the upper compartment above the point of constriction. There are certain other details in the mechanical construction of this apparatus which have not yet been thoroughly worked out, one of which is shown in the diagram, and that is the point of insertion of the tube to the upper compartment. Two bags will constitute the necessary outfit for nearly all cases.

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I desire to call attention to one other thing in the construction, and that is, in working with the larger dilator, it is possible to let the fluid out of the lower compartment entirely and examine the progress of dilatation and obliteration of the cervix, without emptying the upper bag; consequently, when the upper bag is once in place it is always in place.

I think what I have said covers the main points of the demonstration, and I leave it to your riper judgment as to whether it is worth while for me to go ahead with this work.

Dr. Henry D. Fry.—Eliminating those cases in which there is no occasion for rapidly emptying the uterus and confining our views entirely to the necessity of quick delivery, I will make a statement which will be criticised, namely, I believe obstetrics would get along better if no such instrument as the Bossi dilator or any modification of it is used. I think there are two classes of cases and two methods of dilatation, each applicable to its own particular class. In a vast majority of the cases in which we have to empty the uterus quickly, we find that the cervix is effaced. In these I think we can dilate by manual dilatation. It is particularly in those cases where we have effacement of the cervix, where the internal os has been drawn up into the uterine cavity, and we have simply the external os remaining. In the other class of cases, where there is a cervix that is not effaced, where the internal os remains its usual size, then I think the ideal method is to open the uterus by vaginal Cesarean section. I believe the day will come when all obstetricians will accept that operation as the proper way to empty the uterus in all cases where we have a cervix that is not effaced. It is more rapid. There is very little danger attending it. We can empty the uterus quickly. We can make a clean surgical wound, sew it up, and the patient makes a good convalescence, particularly in eclampsia, and where we want to empty the uterus and get the woman back into bed. In the case which Dr. Edgar mentioned, he said he first used the Bossi dilator for fifteen minutes; at the end of that time, dilatation was effected sufficiently to use his hands bimanually, and I believe he emptied the uterus in about forty-five minutes. Dr. Harris says it will take ordinarily forty-five minutes to dilate the os by his method, but when you have this particular kind of cervix I am speaking

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of, one that is not effaced, it takes an hour and a half. What can we do by vaginal Cesarean section? We can make an incision, dissect up the bladder, slit the cervix up through the internal os, turn, and deliver the child in five minutes without haste. This has been done repeatedly. I venture, in contradistinction to the case Dr. Edgar spoke of, to report a case I saw a week ago of a woman who came into the hospital with a convulsion. A doctor was examining the case, taking the blood pressure, when she had a second convulsion. He telephoned me. I saw the case at ten o'clock at night. While examining her she had a third convulsion. She had a long cervix; I could get my finger in it, and I sent her to the operating-room to have her prepared for vaginal Cesarean section. In getting ready to anesthetize her, she had a most terrific convulsion; she came near dying, and it was only by artificial respiration and oxygen gas that we got her to breathe again. I operated on her in the coma that followed the convulsion. She had a small degree of pelvic contraction complicating the case, and from the time I made an incision, till I separated the bladder, opened up the os, put my hand in and turned the child, I consumed only four minutes and a half. There was some delay with the head, so that I had to apply forceps. In nine and a half minutes, however, the baby was born. This was a seven and a half months pregnancy.

We have had four cases of eclampsia delivered by vaginal Cesarean section; all four mothers have recovered, all primiparæ, three between the sixth and seventh months, and the case just mentioned, seven and a half months. If we can by good, clean surgical operations empty the uterus in from five to six minutes, it is not proper to spend forty-five minutes or an hour trying to dilate that uterus and extract the child.

So far as the operation being indicated for the relief of accidental hemorrhage is concerned, there have been reports of two cases that have been operated on for that complication, and although the mothers were in a critical condition, they were both saved. The uterus was emptied promptly, the placenta extracted, and the women reovered.

I am not prepared yet to accept placenta previa as an indication for vaginal Cesarean section. I read before this Society in

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Chicago, a paper in which I reported fifteen cases of placenta previa without a maternal death, and I have had since that time fourteen others, making twenty-nine cases of placenta previa without a maternal death. And the great secret of success in the treatment of placenta previa is the slow dilatation of the os, and not any method of rapid dilatation. I will not accept the treatment advised by Dr. Harrison, who says we must dilate until we can get the hand in and extract the child by podalic version. It will be sufficient to get in one or two fingers, draw down the child, and plug the cervix with a foot. Since Hoffmeier has published his statistics, it has been recognized that if we go back to rapid dilatation it is a retrograde step, and we will not get the same results. I am not prepared to believe that vaginal Cesarean section is proper treatment for placenta previa when that complication can be met so easily and with such good results by this method of slow dilatation. Once in a while it is stated in the books that it occurs in 12 per cent. of the cases. In my twenty-nine cases it happened twice. We may have placenta previa in a primipara, with undilatable cervix, one in which the cervical canal is tightly contracted. In that case, it is possible that vaginal Cesarean section might be done, but that makes a small percentage of the cases of placenta previa that come into our hands.

Dr. Seth C. Gordon.—I want to ask Professor Dührssen and Dr. Fry why, if they are to do Cesarean section in these cases, they do not do so abdominally instead of vaginally? I believe it requires more skill to do vaginal Cesarean section than the abdominal operation. I believe, too, that there is more danger of hemorrhage and of wounding the bladder. In short, I think there is more danger from every part or step of the whole operation than there would be if it were done through the abdomen. The last abdominal Cesarean section I did, I delivered the child in three minutes from the time I took my knife in my hand, and had the child in the hands of an assistant. It does seem to me that this method of good, plain, open work beats all the vaginal work we can possibly do. I have never yet had the craze for vaginal hysterectomy. I do not believe in it. I do not think, as a rule, unless it is a case of malignant disease, you can see and feel and be as sure in operating through the vagina

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as you can through the abdomen. I have not had any experience with vaginal Cesarean sections. I have done several abdominal Cesarean sections and it seems to me that we have better control of our work, can do it much better through the abdomen than through the vagina, and I can see no real reason why you should operate vaginally when you can do so abdominally, and just as quickly.

DR. EDWARD P. DAVIS.—In many cases we must recognize the fact that a very gradual dilatation of the uterus is especially desirable. When a dead fetus is contained within the womb, the uterus will ordinarily empty itself without resistance; rapid dilatation is contraindicated. The retention of the placenta without hemorrhage does not call for immediate dilatation and extraction. In these cases the womb may be safely dilated and usually brought to expel its contents by packing the cervix with gauze and by tightly packing the vagina and the lower uterine segment. With good care this method conveys no danger of infection and very largely controls hemorrhage. Where the genital canal is very badly developed it may be impossible to apply this method satisfactorily.

In cases of eclampsia the balance is sometimes turned against the patient by shock of rapid delivery. The eclamptic woman is in the highest degree toxemic, resembling very much a patient in the last stages of pneumonia. It is impossible to rapidly dilate the womb and remove its contents without inflicting wounds from which slight hemorrhage is inevitable. This results in the absorption of fibrin ferment and adds to the toxins from which the patient is already laboring. Although the patient may be completely anesthetized, there is some shock inevitable to such a proceeding.

We have recently observed two very unfavorable cases of eclampsia survive and give birth to living children without interference with the uterus. These cases were treated by saline transfusion and active treatment addressed to promoting elimination.

In placenta previa the use of the tampon and dilatation by hand are at present our best resource. In attempting to use Bossi's dilator in placenta previa we have seen very serious lacerations of the cervix follow, and result in hemorrhage.

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In employing an elastic bag to dilate the cervix during induced labor, the bag may change a favorable to an unfavorable presentation, and in some cases its removal may be followed by prolapse of the cord. Its use is distinctly dangerous to the child and exposes the mother to the risk of the bursting of the bag within the uterus.

Bossi's dilator used carefully to a moderate extent is a safe and practical instrument to employ rapidly to full dilatation, but it may produce fatal laceration. It remains the best of its kind, but requires experience and practice for its safe employment.

The hand is unquestionably the safest and most efficient dilator of the uterus. When the cervix is resisting it may be sufficiently opened by metal dilators to permit the introduction of the fingers, but further dilatation may be safely accomplished by the fingers of the two hands. The employment of the hand in the form of the cone to dilate the cervix is safe only when danger of rupture of the uterus is not present.

While vaginal Cesarean section is possible, and in some cases may give good results, it has yet to prove its superiority over abdominal section, and is far less applicable in many cases.

Dr. Richard C. Norris.—When arranging this program it is unfortunate that one or two papers were not included that would deal with the conditions which require rapid delivery. This subject must be considered from two view-points; the conditions that require rapid delivery, and the methods to be employed.

Dr. Davis and Dr. Fry have discussed their individual opinions as to the methods to be used in cases of eclampsia, placenta previa, and accidental hemorrhage. I think it would do harm to the American profession if this Society should recommend the most rapid methods of dilatation for delivering in all cases of placenta previa, eclampsia, and accidental hemorrhage. I think each man should place himself on record as to the necessity for rapid delivery in certain conditions, and eclampsia, placenta previa, and accidental hemorrhage are the ones that naturally come before us. From my experience I have been taught one thing in the treatment of eclampsia, namely: that rapid delivery is not always necessary to save life. I have in

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the past resorted to abdominal Cesarean section, and to rapid incisions of the cervix. I have done craniotomy where I felt certain the child was dead or would perish, and in this class of cases my mortality has been high. During the past fifteen years I have seen eight or ten eclamptics every winter in hospital and consultation work, and the more my experience grows, the more convinced I am that we must study each case of eclampsia as it comes under our observation as to whether it requires rapid delivery or not. Personally, I think there are very few cases that require rapid delivery. If we study the statistics of abdominal Cesarean section for the treatment of eclampsia, with its high rate of mortality, and compare the statistics of Professor Dührssen's operation for the treatment of eclampsia, the latter has a very low mortality; but if we will confine his operation to the class of cases that have been so severe as to warrant abdominal Cesarean section, I do not doubt we will find the mortality of vaginal almost as high as that of abdominal Cesarean section. The man who advocates vaginal Cesarean section for all cases of eclampsia will have a low mortality, develop his technique, and, being overconfident, will unnecessarily treat many cases by this method, in which equally good or perchance better results would have been obtained by less aggressive means of treatment.

The same holds true with reference to the treatment of placenta previa. We speak of finding a case of placenta previa in which there is a furious or profuse hemorrhage, with a rigid cervix. I have not seen such a case, and believe it must be rare. By the time a patient has bled profusely, she would have lost so much blood that the life of her child is in greatest jeopardy and uncertainty. Subjecting her to a grave operation, we expose her to unwarranted risk. Therefore, in placenta previa, with the following ideal surgical conditions—a rigid, undilatable cervix, profuse hemorrhage, a living and mature fetus—it is an operation that might be available; but as we recall our cases of placenta previa, we do not have the above favorable conditions. Personally, as I look back on my experience, I cannot recall a case in which I was not able to introduce one or two fingers through the cervix in placenta previa, and I rely upon the application of the bag to control hemorrhage until sufficient

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dilatation has been secured to do version and slow extraction. The application of Professor Duhrssen's operation to placenta previa, if an ideal case could be met with, would be available. If I meet such a case, I will try it. But such cases must be exceedingly rare, and thus narrows again the indications for vaginal Cesarean section in placenta previa, as well as in eclampsia.

In cases of accidental hemorrhage we have different conditions to contend with, and if Professor Duhrssen's operation is to have a wide field of usefulness, it is for this accident, where we do have the undilated cervix in the presence of serious and profuse hemorrhage. Here I would unqualifiedly indorse it. But we know how rare accidental hemorrhage is; and, again, the field of usefulness of this operation is restricted.

As to the other methods of dilatation, I have used the Bossi dilator, and my experience has taught me that it is not a dangerous instrument for dilatation to the extent of 8 or 9 cm. I was one of the first in this country, following the work done abroad, to combine partial metallic with subsequent complete bag dilatation. I am an ardent admirer and user of the Voorhees bag for cases where relatively rapid delivery is required.

In a paper I read before a meeting of the Allegheny County Medical Society, held in Pittsburg, I reported a series of cases of induced labor—thirty-five for pelvic deformity, and fifty-two cases for other conditions. Analysis of the time consumed by the older methods, contrasted with a series of thirty-two cases where metallic dilatation up to 8 cm. was practised, followed by complete dilatation with the bag, the reduction in the time of delivery was marked, and in my experience practically that method meets almost all conditions. By the use of metallic dilatation up to a point which avoids laceration, followed by the bag and forceps or version deliveries, the duration of labor was reduced five and a half hours, and where labor was spontaneous and there was no pelvic deformity, its duration was reduced twelve and a half hours. My experience would lead me to sum up the situation as follows: Very rarely in obstetric practice is rapid, five minute delivery required. In the majority of cases of eclampsia it is an unwise plan of treatment. In the majority of cases of placenta previa it is unwise treatment. In most cases of accidental hemorrhage it is the best treatment.

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As to the merits of abdominal and vaginal Cesarean section, the choice of method must rest with the individual operator's training, experience, and skill. An experienced abdominal operator, with no skill in vaginal work, will serve his patient's interests by operating through the abdomen, while the skilled vaginal operator holds the advantage. We feel indebted to Professor Dührssen. We have followed him in his work; we have familiarized ourselves with his technique; but it is the privilege of the members of this Society not to be enthusiastic over a method which some of us feel has limitations, yet when clearly indicated has a distinct value in obstetric practice.

DR. FRY.—I wish to call attention to the fact that in seventy-eight cases of eclampsia treated by abdominal Cesarean section, the mortality was 41 per cent.

DR. GEORGE TUCKER HARRISON.—I have been gratified at the remarks that have been made, as I never thought of hearing so many fine things said about the Bossi dilator. I think in the estimation of most men it is becoming less and less used, and I am very much astonished to hear that it still has so many potent friends. I think I voice the opinion of those gentlemen who recommend its use if I say to you, you must not go too far. Use it gently, which is enough to show what a dangerous instrument it is.

With reference to vaginal Cesarean section, the trouble with Dr. Norris is that he limits its field of usefulness too much. I read carefully the opinions of the best obstetricians of the world, and I think the best of them are in Germany. They have certainly elevated scientific obstetrics. I have listened to the teaching of the great German professors with admiration and respect, and I know that the best of them, like Olshausen, Bumm, Veit, and others, have come to the conclusion that vaginal Cesarean section is not a dangerous operation; that it is a comparatively safe operative procedure, and they are all using it more and more.

So far as Dr. Gordon's criticism is concerned about the superiority of abdominal over vaginal Cesarean section, I will say that I am often amazed in the obstetrical society to hear these gentlemen speak about the operations they perform for retroflexion of the uterus, etc. I have had occasion to ask some-

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of those gentlemen if there was not some other party to the contract beside the surgeon. Patients are not always willing to submit to these operations that you speak of. Let us take, for instance, Cesarean section in an eclamptic case. The public at large does not know anything about the danger of the disease. They have not the slightest conception of it. If you propose Cesarean section, and it is accepted and performed, if the patient dies they will swear that you killed her. If you propose it and do it, you do it with the peril to life and to your reputation. They would willingly allow you to perform vaginal Cesarean section, as that is an operation which would not make a great impression on them. But this thing of ripping the belly open, as the friends would term it, is horrible to them, and very few would submit to it, whereas they would submit to vaginal Cesarean section.

Let me mention another objection to abdominal Cesarean section. A New York doctor, Dr. Tull, on opening the abdomen found the entire ovum coming through the old incision which had given way, and the blood was largely filling up the abdominal cavity. Of course, the woman had been previously operated upon and through the scar of the old incision the ovum came out, so that there is always danger in cases of Cesarean section of a woman having another child and of the old scar giving way. So far as vaginal Cesarean section is concerned, that does not obtain.

Dr. Gordon has said that we cannot control hemorrhage by the vaginal route; that by the abdominal route we have everything entirely under our control. This is not correct there is no better way of performing hysterectomy, where one has a small fibroid to remove, than by the vaginal method, and it is so much more comfortable for the patient afterward. With reference to the criticism of Dr. Fry in regard to my point that we ought not to deliver according to the Braxton-Hicks combined method, but wait until the whole head can be passed, I will say, that, in placenta previa, if you can introduce two fingers you can dilate a little more so as to introduce the hand. Fortunately, I do not have as large a hand as some gentlemen, and that is the reason I am in favor of it.

Dr. Philander A. Harris.—I do not like to have my instrument classed with the Bossi dilator. It is an entirely different instru-

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ment. If one knows how to use my instrument he can accomplish all, and even more, than can be accomplished with the Bossi instrument and he can accomplish the work more easily and also more safely. I would like Dr. Edgar, in closing the discussion, to state wherein he regards my instrument " inferior to the instrument of Bossi."

Dr. Harrison has said that the method of manual dilatation, as employed by myself or the method as employed by other persons is not speedy enough.

In placenta previa the uterus dilates more easily and dilatation can be accomplished in twenty minutes or so. I have accomplished it in fourteen minutes, in fifteen minutes, seventeen minutes, etc. I recommend slowness of dilatation, however, in order that laceration shall not occur. I do not believe lacerations will occur in more than one case out of fifty if dilatation is slowly effected. I can quickly enlarge the cervical ring, but in so doing there is greater liability of lacerating the tissues. It appears strange to me that in Dr. Edgar's clinic his younger physicians have ruptured the membranes by the employment of my method of dilatation. I do not think that such statement from him regarding the accidents of those who work under him should weigh against my own experience, when I have dilated the cervix eighty or a hundred times and have never once ruptured the membranes in so doing. It is reasonable and also fair to suppose that the assistants to whom Dr. Edgar refers did not understand the method.

The drawings exhibited are only illustrative. According to the method the hand never goes much inside the uterus, or, rather, the fingers never project to any extent inside the uterus. The rule holds just as good whether two, three, or four fingers are engaged in the cervical ring during dilatation. Throughout the procedure the entire hand does not go within the uterus, but rests in the vagina. Those who imitate my methods are not likely to rupture the membranes.

I wish to say a word or two with reference to our honored guest, Prof. Dührssen, and his work. He is a man of whose accomplishments we have heard so much in the past, who has opened the right of way for delivery of the child in a number of conditions for which we have no good substitute. I am sure

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we are glad to have him with us and to have heard all that he has said. I cannot but speak in the highest praise of the value of vaginal Cesarean section in *selected* cases, particularly where there may be a lot of fibrous tissue or where there is a cancerous condition of the cervix or something akin to it, rendering the cervix undilatable, and we will not condemn this operation where there are any such good indications for its use.

Theoretically, rubber bags should constitute the ideal method for dilatation of the cervix, but practically they work so slowly, and are so often uncertain in action, that I am inclined to look askance at them and am only hoping that in some way they may be improved and later take a more important position in the armamentarium of the obstetrician.

Dr. Fry spoke of the rapidity with which vaginal Cesarean section may be done, but he did not say one word about the time required for the suturing of the uterus or whether it is possible to restore it to as good condition as before the incision was made.

Dr. Fry.—The whole thing can be done in about twenty minutes.

Dr. Harris.—I wish to say a few words regarding the Braxton Hicks method. I used it in the beginning of my obstetrical career, but as soon as I learned that the cervix could be manually dilated under anesthesia in an average time of half an hour or less to a circumference of ten or eleven inches, I at once began to deliver patients upon the table as an operative measure, and under a not very long maintenance of anesthesia.

Dr. Davis has referred to the fact that my dilator lacks a pelvic curve. I have found no occasion whatever for the pelvic curve in my instrument. It is only necessary to bear down slightly on the perineum and at the same time to push the instrument slightly upward and a curve in the blades does not appear to be required. I have used it upon a person weighing two hundred and forty pounds, and did not feel the need of a pelvic curve.

I value the remarks of Dr. Norris relative to the different conditions requiring hasty delivery.

Dr. J. Clifton Edgar.—I have only a few words to say, and first in reference to the use of the flexor muscles as against the extensor muscles. My experience has been that I can use

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my flexors to better advantage than my extensors, especially in using the bimanual method.

As to Dr. Reamy's remarks, regarding the use of the cone-shaped hand, I must take exception to them, because I believe it is entirely unphysiological. The use of the cone-shaped hand from below upward is exactly the opposite way in which nature dilates the cervix. Hydrostatic bags act as does nature. I know of two cases of rupture of the uterus caused where the cone-shaped hand was used, and one operator was a personal friend of mine. The rupture was caused in this way: There was only partial dilatation; he used the cone-shaped hand to push up from below and pushed the uterus away from the utero-vaginal junction, and as a consequence the intestines came down. He states he will never use that unphysiological method of dilatation again.

I am an advocate of the Braxton Hicks method. When Dr. Davis says that eclampsia does not always demand rapid delivery, I am quite in accord with him. I make two varieties of eclampsia, the nephritic and toxemic varieties. In the nephritic variety of eclampsia, the patient does well under almost any treatment provided the uterus is emptied. Another variety that is not as common as the nephritic is what I have called the "hepatic" variety with a question-mark after it. In these cases the sooner the uterus is emptied, the better it is for the patient. They have lesions of the liver, and if such women are to be saved, they ought to have their pregnancy terminated as soon as possible.

In answer to Dr. Harris, relative to the objections I made to his instrument, as compared with the Bossi dilator, in my experience I have tried to be entirely unprejudiced in regard to it. It slips off of a long cervix more easily than does the Bossi dilator. Of course, that may be a personal equation, but it does not seem to hold the ring in the same way that the Bossi dilator does. Again, the cervix is not so liable to tear under the use of the Bossi dilator as with the use of the Harris instrument. In the second place, it has two thumb-screws, which makes it more complicated, whereas the Bossi dilator has only one, and especially if one places the fingers of one hand up against the cervix, as I do with every dilator, and it then leaves us one hand to manipulate two thumb-screws. This is a minor objection possibly. Again, the two loose blades are a little more difficult

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to adjust than the Bossi dilator. Those are the principal objections to the use of the instrument.

I am much interested in the hydrostatic bag. I have never used the one described today. There is a liability of large hydrostatic bags exploding. I was always fearful, whenever I used the large, original Champetier-de-Ribes' bags that they would explode. I have seen two ruptures of the uterus from the explosion of the de Ribes bag. In both instances the ruptures were complete.

PROFESSOR DUHRSSEN.—With reference to the statistics of abdominal and vaginal Cesarean section, I will say that the mortality of classical Cesarean section is much greater than that of vaginal Cesarean section. As Dr. Harrison has pointed out, women are afraid of classical Cesarean section. They are opposed to that operation. They will consent to vaginal Cesarean section being performed where they would not to classical Cesarean section.

I tried to demonstrate by the operations I recently performed in New York, Baltimore and Washington, that we can do vaginal Cesarean section as surgically and thoroughly as we can abdominal Cesarean section. Through the vagina one can see all of the pathology which is present; he can extirpate the appendages by the vaginal route as well as through an abdominal incision. Many physicians say that in vaginal work there is nothing to be seen. In answer to that statement, I will say that you can see all that is necessary if you use the proper technique and the proper instrument.

I wish to thank Drs. Harris, Fry, and Harrison for their kind remarks regarding vaginal Cesarean section.

Concerning the indications for this operation, I think we shall agree as to them in the near future. But I have noticed with pleasure that a number of operators have supported vaginal Cesarean section and have said that it furnishes as rapid a method of delivery as does classical Cesarean section. Vagina Cesarean section is applicable in cases of cancer of the cervix or in cases of sclerosis of the cervix.

Concerning the indications for rapid emptying of the uterus in eclampsia, I believe it is a good plan, because eclampsia is an intoxication, and like other intoxications it is a good thing to eliminate the cause or causes of it as soon as possible.

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THE DEVELOPMENT OF CANCER IN THE CERVICAL STUMP FOLLOWING SUPRA-VAGINAL HYSTERECTOMY.

By Andrew F. Currier, M.D.,
Mount Vernon, N. Y.

That there have been so few reports of cancerous degeneration in the cervical stump which remains after the removal of the corpus uteri by abdominal section is due, in part at least, to the fact that the great majority of these cases are not heard from after they leave the hands of those by whom the primary operation is performed.

This fact is easily explained.

It is not difficult to keep in touch with those who are well-to-do, but such is not the case with those who are poor, and ignorant, and careless, especially if it is necessary to make a long journey to undergo an examination at the hands of the one by whom the operation was performed. With such patients no attention is paid to symptoms which are not urgent, and when urgent symptoms arise they are quite likely to become discouraged, and make no effort to obtain skilled assistance. On the other hand should they live in a large city and attend a public clinic or dispensary, they are quite as likely to go to a stranger as to the one who operated upon them, and possibly fall into the hands of one who does not appreciate the importance of their symptoms.

Still more is this true should they seek relief at the hands of the busy general practitioner who may delay to call to

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his aid the gynecologist until the time for the adoption of radical measures has passed.

But perhaps the most important factor in the history of such cases is that the surgeon who does the primary operation fails to keep in touch with them, and loses sight of them altogether, whether in public or private practice, when he discharges them apparently cured.

The few exceptions are principally those who are connected with well-organized hospitals in which the details of clinical history are accurately recorded, and where more or less attempt is made at accurate classification and analysis of the various types of disease.

The cases in which this complication may arise are usually those in which the uterus has been removed for myoma.

That myoma frequently coexists with cancer is a matter of common observation.

Piquand (*Ann. de gyn. et d'obst.*, July, 1905) collected forty-five such cases, in twenty-four of which it was thought that the fibro-muscular elements had been transformed into epithelial cells, though in some of them there were pre-existing cells which proliferated and developed malignancy. These cells were supposed to have been derived either from the embryonic remains of the Wolffian or Mullerian canal or were simply epithelial ingrowths into the fibrous tissue.

I am satisfied from my own experience that the co-existence of cancer and myoma is much more frequent than Piquand would seem to think.

Noble (*Trans. Am. Gyn. Soc.*, 1904, p. 299), in an analysis of 1188 cases of fibroid tumor operated upon by various surgeons, found twenty-nine in which cancer of the corpus uteri was a complication, twelve in which there was cancer of the cervix, and one in which there was cancerous infiltration of fibroid tumor arising from adeno-carcinoma of the corpus uteri by metaplasia. I believe that the records of

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any institution in which large numbers of cases of cancer are seen would show a much greater number of coincidences of cancer and myoma than the statistics of Noble would indicate and that the number associated with cancer of the cervix is much greater than with cancer of the body of the uterus.

I have not as yet seen any conclusive evidence that myoma is transformed into carcinoma and histologically we would not expect such a sequence.

The condition which we are considering seems to me to come under another category.

A uterus which is the seat of extensive fibroid degeneration is certainly a favorable field for other degenerative processes.

It may be present in an individual with a diathesis or dyscrasia, with an inherited tendency, for example, to tuberculosis or malignant disease, which may be excited to outbreak by the irritation of one or more myomata.

Suppose the seat of the myoma to be removed and the retained cervical stump to be apparently free from all traces of such a new growth, what conditions are present to favor the development of other neoplasms?

Manifestly the conditions are the reverse of normal; the chief source of vascularization has been removed, and the nerve and lymphatic connections have been interrupted. There are doubtless many cases in which this defect is not compensated by the blood supply from the anterior vaginal wall and the nutritional elements which are derived from the peritoneum where the stump is thus covered, however firmly it may adhere.

Cases have been reported in which the cervical stump has entirely separated from its vaginal attachments, and has been extruded from the body, and we know that it very commonly undergoes atrophy.

I feel convinced that with all the great achievements of modern surgery we have made the mistake of supposing that because an organ can be removed without loss of life,

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and with apparent benefit to the individual, we have learned the whole story.

Granted that an organ frequently demands removal to save life which it is jeopardizing, granted also that it is quite possible that the obliteration of its function may not be inconsistent with a good degree of health and comfort, there is still something in the subtle physiology of the body which we have not yet grasped, and surgery with all its refinements may some day appear crude as the solution of the problems of morbid function.

Lumpe has collected seven cases in which malignant degeneration of the cervical stump has taken place (*Centr. Gyn.*, Nov. 4, 1905, p. 1354). Three of these were reported by Chrobak, whose advocacy of supravaginal hysterectomy is well-known, in connection with several hundred operations which he had performed, or the reports of which he had analyzed.

One was a sarcoma in which the stump was covered by peritoneum, while in the other two the stump was treated extra-peritoneally. In both of the latter cases the stump became detached from the abdominal wall.

Olshausen (*Veit's Gynäkologie*, Band ii, p. 711), in discussing the operation of supravaginal hysterectomy, stated that these were the only reported cases of this kind with which he was familiar and he did not consider so small a number an argument of any value against the operation.

Savor (*Centralblatt f. Gynäkologie*, 1898, p. 1368), at a meeting of the Obstetrico-Gynecological Society of Vienna, June 14, 1898, demonstrated a case of carcinoma of the portio vaginalis following laparo-myomectomy, the stump having been covered with peritoneum. His conclusion was that, though such cases were rare, they afforded a valid argument for the complete removal of a diseased uterus.

The same author reported an additional case privately communicated to him by von Hacker.

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Another case was reported at the same meeting by von Erlach.

The seventh case furnished the theme for Lumpe's paper, and occurred in a woman suffering with osteomalacia, whose uterus was removed at the fourth month of her ninth pregnancy.

At the time the operation was performed there was no evidence of cancer of the portio vaginalis. Eight months subsequently cancer was discovered in this organ and it was removed by abdominal section. The only unusual condition noted at the operation was the presence of many adhesions.

To the foregoing series I beg to add another case which recently came under my observation.

The patient, aged fifty-one years, was sent to me from Port Chester, New York, October 5, 1905.

The corpus uteri, ovaries, and tubes had been removed for uterine myomata, March 23, 1901, by the late Dr. George R. Fowler, of Brooklyn, New York.

The patient recovered promptly from the operation but subsequently developed carcinoma of the left breast, and this was removed by the same surgeon eighteen months after the first operation. Recovery from the second operation was also prompt, though she has complained of pain and numbness in her side and arm ever since.

She stated, furthermore, that she had been told by Dr. Fowler that a further operation upon her uterus would be required, but this was deferred on account of the disease which had developed in her breast.

As the breast operation was performed during or near September, 1902, it seems hardly probable that cancer could already have made its appearance in the cervical stump, or it would have made more headway in the three years which intervened before she came under my observation. The patient's general condition was good, though she was of a decidedly neurotic temperament.

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The portio vaginalis was quite large, two and one-half inches in depth, movable, and the endometrium was very sensitive to the probe.

I could hardly believe, in view of the size of the organ and the exudate which seemed to surround it, that the uterus had been removed.

There was great sensitiveness in the tissues surrounding the cervix, cystic degeneration of the mucous membrane of the os uteri, and relaxation of the vaginal walls.

The breast scar was sensitive, especially near the axilla, but there was no evidence of recurrence of the cancer. The cervix was dissected out from the vagina, November 10, 1905, and was found well covered with thickened, firmly adherent peritoneum.

The uterine arteries were absent and no disease was discoverable within the pelvis.

The mucous membrane of the os uteri showed typical epithelioma, which had not proliferated to the surrounding structures, nor had the tissues broken down. The patient recovered promptly and I have not seen her since she returned to her home.

The suggestions which occur to me in connection with the consideration of this subject are the following:

1. The necessity of more careful clinical and pathological records, both public and private, in all the cases in which supravaginal hysterectomy is performed. This would probably result in the discovery of cancer of the cervix or corpus in cases in which it is not suspected and would probably bring to light additional facts in regard to the history of the evolution of cancer.

2. The periodical examinations of those who have undergone the operation in question at not longer than six months intervals. This is especially desirable for those whose tissues are in a bad condition of nutrition, or who suffer from hereditary taint.

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3. Complete removal of the uterus offers greater security from cancer than does retention of the cervix. If the patient's history reveals any conditions which suggest the possibility, near or remote, of future degeneration of tissues complete extirpation should be the invariable rule.

DISCUSSION.

DR. HENRY P. NEWMAN.—I will not take time to present this case in detail but will simply report it as corroborative of what Dr. Currier has said. I show the specimen and slides of a carcinoma of the cervix which developed seven years after the primary operation, a suprapubic amputation of the uterus for multiple fibroids. The woman, aged thirty-nine years, was healthy up to the development of these fibroids ten years ago. She had the history of interstitial fibroma and the uterus and tumors on removal were about the size of a fetal head at term. She remained well until a year and a half ago when she began to have trouble in the cervical stump. I was away from the city during this time and she did not come to me until January of this year. Carcinoma was present in the stump of the cervix, but the disease, as you see, had not advanced beyond this area. It was a very malignant type as the pathological report will show. The suggestion made by Dr. Currier as to to the advisability of panhysterectomy in all cases of large multiple fibroids, even where the cervix is comparatively healthy, cannot be too carefully considered. This woman presented a cervix as healthy as we find in childbearing women under these conditions. She is healthy today and shows no ill effects of the former hemorrhages. I have shared the general prejudice against complete removal in cases of healthy cervix, preferring to leave it as a support to the other pelvic viscera and to minimize trauma to the tissues. These recent and multiplying reports of resulting malignant trouble, however, may oblige us to reconstruct our theories of rational procedure.

DR. CHARLES P. NOBLE.—If I had known that this paper was going to take such a wide scope, I would have brought

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down a few of the records I had here yesterday, as I have a great many data which would be germane to the subject, but supposing it dealt with the title, I have only a few data at hand.

So far as my own experience goes, I have had two cases of cancer of the cervix following supravaginal amputation; roughly speaking, in six hundred cases; three hundred fibroid cases, and as many more following operations for other conditions. One of these cases occurred a number of years ago when it was not my habit to have all cases examined microscopically. This patient had cancer of the cervix and pelvis three months after operation, so that it is probable that a cancer of the corpus complicating the fibroid, or a cancer of the ovary was overlooked. In six hundred cases I have had one other case of cancer of the cervix following operation.

As I have been studying fibroid tumors for years, I may say that the latest paper on fibroids is one by Winter in which he reports sixteen cases of cancer of the cervix following supravaginal amputation. That includes all in the literature. Of all the thousands of supravaginal amputations there are only sixteen cases in the literature. So, it seems to me, as a practical matter, it is worthy of consideration and reflection; but it certainly would not influence me to change my technique unless the future shows a very much greater percentage of occurrences than this record shows at the present time. There is no doubt that the primary mortality from supravaginal amputation is lower than that of total hysterectomy.

In speaking from memory of some of the other points raised by Dr. Currier; first, the question of cancer arising from fibroid tumor. Some years ago I removed what I considered a degenerated fibroid tumor from an old maid aged sixty years, and to my surprise the pathologist reported that she had an epithelioma in this fibroid tumor. The pathologist's assistant happened to be present in the room at the time of the operation, and he cut the tumor open to see whether she had cancer of the corpus. From his examination we were led to believe that we were dealing with a degenerated fibroid; and when the pathological report came that it was an epithelioma in the fibroid, I was at a loss to understand it because she had a healthy cervix. After prolonged study by Dr. Pearce and Dr. Cullen, they concluded she

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had adenocarcinoma that had been overlooked; that it invaded the fibroid and by metaplasia the cells had taken on the appearance of squamous-cell epithelioma.

Piquand, whose paper was referred to by Dr. Currier, has studied the matter carefully, and reports a number of cases of cancer in fibroids. It is quite easy to understand how adenomyomas may develop cancer because they contain mucous membrane. The probabilities are that on further studying the matter it will be found that all of the cases of cancer arising directly in fibroids are instances of adenomyomas, and not of myomas.

The next point I would like to mention is that, at the present time, I have a second series of five thousand cases of fibroid tumor to study the relation of cancer to myoma, and the evidence is overwhelming that the presence of fibroid tumors of the uterus leads to cancer. We do not say that a fibroid tumor becomes cancer; but the presence of the tumor in the uterus exerts an influence upon the nutrition of that organ or an influence upon nutrition which we do not understand, and that, as a matter of fact, cancer develops, particularly cancer of the corpus. This matter was brought to my attention some years ago in observing the relative frequency of cancer of the corpus uteri as compared with cancer of the cervix in fibroid tumor cases. As the number of cases increases the evidence becomes stronger and I may say, in this regard, I have such good company as Cullen in this country, and Piquand and Winter abroad. Winter, in his last paper, states that fibroid tumors are a direct cause of cancer of the corpus uteri. Piquand goes further and states that the evidence is convincing that fibroid tumors are a direct cause of cancer of the cervix. That is a point I have not worked out. It has a very direct and positive bearing on what shall be done with fibroid tumors of the uterus. Take them out.

An able paper has been written on the subject of fibroid tumors recently by Piquand, and while I speak from memory, my recollection is that he states that cancer is five times more common in women who have fibroid tumors than in women who do not have them, irrespective of the question of relative frequency of cancer of the body and cervix. The ratio of cancer of the body of the uterus and of the cervix is differently given.

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Cullen gives it at one-quarter, basing his statement on examinations made at the Johns Hopkins Hospital. Winter gives it at 1.15, Williams, 1.40, and states other men make the ratio much less because they have reported on operable cases only. If one goes further back and consults the older authorities he will find the percentage is much higher. Jap Sinclair, in his book, states that there are only 2 or 3 per cent. of adenocarcinomas of the corpus uteri as compared with cancer of the cervix. If we study the fibroid tumor question, we will find that cancer of the corpus uteri is far more common than cancer of the cervix.

I have again to speak from memory, but my recollection is that there was 2 per cent. of cancer of the corpus uteri in these five thousand cases, less than 1 per cent. cancer of the cervix.

Dr. Walter P. Manton.—While I suppose that Dr. Currier's paper covers only carcinoma and epithelioma developing in the stump, I would like to mention a case in connection with this subject.

I operated about three years ago on a woman aged forty-five years, who had an immense fibroid tumor which extended above the umbilicus. She had had repeated hemorrhages, and had consulted a number of different physicians who tried to relieve her by palliative means. The macroscopic appearance of the fibroid was that of the ordinary growth. I expected the woman would make a good recovery, which she did, from the primary operation. Three months later she telephoned me from one of our suburban towns that she was having hemorrhages from the vagina. I advised her to come to Detroit and let me see what the trouble was. I left only a very small portion of the cervix at the original operation, and the tissues were apparently normal; but when she consulted me the second time I found a large cauliflower growth protruding from the external os; very friable, and bleeding profusely at the slightest touch. I immediately removed the remnant of stump, including the new growth, and then had the original tumor examined. The pathologist found a round-cell sarcoma in the original tumor and a spindle-cell sarcoma in the stump. This is the only case of the kind I have been able to find in the literature. Possibly, Dr. Noble may have seen a similar case, but I had

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not met with anything of this nature before. It seemed to me that the case is sufficiently interesting to report in connection with this subject.

Dr. William M. Polk.—I take it, the question at issue is, Shall we, or shall we not, remove the cervix in cases of hysterectomy? And I will say, we know very little about it except for the light which has been thrown on the subject here today. We have been theorizing since a discussion occurred in the American Gynecological Society when Dr. Baer brought up the question of this form of removal of the uterus at the Brooklyn meeting some twenty years ago. The point in favor of leaving the cervix has been well put by the speakers, and while undoubtedly we have reason to believe that in tissues such as the cervix we are likely to meet with malignant degeneration, where there is epithelial structure that is prone to that kind of development, we know that it is a matter of surprise if we meet with this form of disorder. The question as to whether the disease can be detected at the time of the original operation or not, seems to be answered by the report of the case in which five years elapsed between the primary operation and the development of the disease. So I do not see that we are in a position to decide the question except on general principles based upon the observations which have been presented to us by the several gentlemen who have spoken here today. Arguing from analogy, one would infer that the curtailment of the source of the nerve and blood supply to the cervix would have a tendency to diminish rather than increase the disposition to malignant degeneration. I take it, that is the basis of the extensive ligation of vessels with a view to preventing the recurrence of carcinoma of the breast, and it is at the bottom of the suggestions made in regard to extensive ligations of important vessels in the removal of cancer of the uterus. The practical point for decision is, whether we shall insist upon the removal of the cervix in all cases, that is, do a panhysterectomy, or whether we shall continue removing tissue along the line followed at the present time. That is a question that is met by the difficulties of the procedure. I take it, that no one, in dealing with a case of myoma, if he found his patient in very bad condition, would undertake to remove the cervix. If, on the other hand, the vital force of the patient

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was not diminished, one would be disposed to do a more severe operation and would remove the cervix. So that, while there is ample food for reflection in the report of Dr. Currier's case, and in the report which has followed it, it appears to me, that it does not compel us to reach any other conclusion upon the subject as yet.

DR. FERNAND HENROTIN.—This paper is very interesting in that it brings the subject up to the present time. The operation of supravaginal amputation is so ideal, has produced such beautiful results, and has been taken up by such a large number of the profession, that everything bearing on the removal of the cervix is important. In regard to this matter, I want to make one suggestion, and that is, that all cases of this kind which are reported in the future must be fully investigated so as to make sure that the diagnosis of carcinoma is established by the clinical and pathological findings. Probably it has been the habit of a good many operators, as it has with me, in performing supravaginal amputation to leave quite a bit of tissue above the mere cervix, and reconstruct and cover with peritoneum, believing the operation to be safer when done in that way. As a matter of fact, it happens that hemorrhage sometimes occurs from the remaining portion of the cervix. I think probably a good many of you have seen bleeding tissue from the cervix after supravaginal amputation. In fact, I have seen two or three women who claimed that they menstruated for months, and there is no question, that with some patients there is a tendency to the formation of granulation tissue and the issuing of blood from the cervix.

Three years ago I operated on a woman for a suppurative lesion, and finding the whole pelvis very much involved, the ovaries practically useless, I removed the ovaries and tubes, and did a hysterectomy. Two years afterward that woman returned to me blanched with a severe hemorrhage. She had granulation tissue and an excavated cervix. I was perfectly certain this was a case of cancer of the cervix that had developed in the scar tissue. I operated on her per vaginam, and removed the cervical stump completely. She has been well ever since, much to my surprise, although the disease had the earmarks and physical signs of carcinoma. Examination of that cervix

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and of the tissue around it by the pathologist proved the condition to be one of simple granulating, bleeding stump that came from inside the cervix and was non-malignant.

In arriving at a conclusion in small hemorrhages from the cervical stump after supravaginal amputation, we should be careful to insist upon proof of the malignancy of the condition found.

PROFESSOR M. DUHRSSEN.—I have been very much interested in the paper of Dr. Currier and in the case reported by Dr. Newman. I should say, the fact that cancer of the cervix can arise after supravaginal amputation or supravaginal hysterectomy, speaks in favor of vaginal hysterectomy in cases of fibroids, because in extirpating fibroids by the vaginal route the cervix can be removed without any difficulty. In all of the cases which I have seen operated upon in America for fibroids, I should like to say that it would have been possible to have removed the myomatous uterus through the vagina I demonstrated in New York that it was possible to remove a very large myomatous uturus through the vagina, with the aid of a vagino-perineal incision, and incision of the levator ani muscle. In one case upon which I operated at the Polyclinic in New York the myomatous uterus was as large as a man's head. The patient was an old woman, with a narrow vagina. I split the vagina and took out the myomatous uterus without difficulty. I also had the opportunity of operating on a similar case for Dr. Kelly at the Johns Hopkins Hospital. If you do not like vaginal hysterectomy for fibroids, it is very convenient to extirpate the cervix by the abdominal route. It is easy. I follow the method of Noble. I extirpate, first, the body of the uterus. I take two bullet forceps; I split the cervix anteriorly and posteriorly, and there is very little to do then except to tie the remains of the broad ligaments and to cut off the cervix. It is a matter of two or three minutes. This operation is not any more dangerous than supravaginal extirpation of the myomatous uterus alone. If I have to remove large myomatous tumors through an abdominal incision, I extirpate in most cases the whole uterus, first the body, according to the method of Noble, and then the cervix. If the cervix is badly lacerated I take it out. Undoubtedly bad lacerations of the cervix lead

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to cancer, hence such badly lacerated cervices should be removed. I see no objection to doing the combined operation if the danger is not great, and I believe the danger to life is not great in most cases, particularly if we operate first according to Noble's method, and then take out the cervix. I believe that some cases of cancer of the cervix are so accurately observed and described, there can be no doubt that carcinoma develops after the first operation.

I was interested in the remarks of Dr. Henrotin with reference to hemorrhages from the cervical stump. I should like to point out that Zweifel, of Leipzig, operates upon fibroids in this manner (supravaginal amputation). He leaves behind a little of the body of the uterus, and one ovary, in order to preserve the menstrual function, and perhaps it is possible that in such cases where hemorrhages are said to occur from the cervical stump, when an ovary or part of an ovary is left, they are really traceable to the ovarian tissue that is left and not to the cervical stump.

DR. CURRIER.—I hope no gentleman here supposed that the object of writing this paper was in the least revolutionary, because I feel perfectly satisfied that supravaginal hysterectomy is an operation which will probably persist. It is a good operation, and I see no reason why surgeons should not continue to perform it. But it seemed to me, in considering the case which I have reported, that as the first function of this Society is encyclopedic in connection with this department to which it is devoted, any information bearing upon the surgery and pathology of the pelvic organs is of importance and should be recorded, and that is my only reason for inflicting this paper upon the Society.

I was impressed with the narration of the case by Dr. Noble, of the development of cancer in a virgin aged sixty years, within the body of the uterus, because I had a similar case only a few months ago in a woman, aged sixty-one years, also a virgin. The supposition was that it was simply a case of fibroids or myomata, but very extensive cancerous development of the corporeal endometrium was found in the specimen removed.

I wish to thank very much the various gentlemen who have participated in the discussion.

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RESULTS OF VAGINAL SECTION AND DRAINAGE IN EARLY CASES OF ECTOPIC GESTATION.

By Willis E. Ford, M.D.,
Utica, N. Y.

The interest in the subject of extrauterine pregnancy has diminished very markedly since the profession has agreed upon its proper management, and since the technique of the operation has been perfected. My interest has been revived by the fact that during the month of April of this year two rather serious cases came to me, and I have taken the trouble to look up the question of the early diagnosis of this condition, and the treatment by vaginal incision and drainage of my own cases. There is no intention of discussing the general subject of ectopic gestation in this brief clinical report or of advocating anything but abdominal section for ruptured cases; but simply to give the results of treatment in the few cases of unruptured tubes that I have operated upon and have been able to ascertain the result after a year or more. The case that has interested me most and has caused me to present these clinical observations, I shall take the liberty of briefly relating.

In 1897, a woman aged thirty-six, an American, twice married, came to the hospital with a moderate-sized pelvic tumor that fluctuated and seemed to be either a very large salpingitis or a pelvic abscess the result of a salpingitis. She had a history of three miscarriages and one labor at term, but the child died in two hours. Three months previous to her admission to the hospital she had missed her regular menstruation and had experienced sharp pain for the first

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month or six weeks, and then had fainting spells; but during this time she had practically no medical care. She had a slight uterine hemorrhage and a few shreds with the general history of extrauterine pregnancy up to the time of the tenth week, when she had sharp pain, chills, and fainting. It was two weeks after this (which was the time of the probable rupture of the tube) that I opened the vagina through Douglas' cul-de-sac and passed my finger into the opening. A terrific hemorrhage followed, but fortunately the opening I made in the sac was so small that I was able to partially control the bleeding with the finger in the sac; and then to pass iodoform gauze over my finger into the sac until I had stopped it. There was subsequently a watery drainage, the tampon was left for six days, and then appreciating the danger, ready for an abdominal section in case I got a bad hemorrhage, I removed the gauze. In doing this I had another sharp hemorrhage of such magnitude that the woman instantly collapsed, and she was tamponed again with gauze because it could be done quicker than the abdomen could be opened, and she revived and went on to a recovery. I have never seen any hemorrhage so serious, and made up my mind that I would not do any more vaginal sections for ectopic gestation. The case made such a good recovery afterward and the mass so thoroughly disappeared and everything seemed so normal, without adhesions, that I subsequently tried twelve cases that I have to report.

In April of this year this same patient returned to the hospital with a history of miscarriage that had not been cared for, which was followed by a uterine hemorrhage lasting six weeks. She had miscarried at the third month. The uterus was open and some afterbirth was curatted away without ether. In doing so I discovered a pelvic tumor, egg-shaped, attached to the posterior vaginal wall, and holding, perhaps, a quart of fluid, which I opened and drained. The sac of this tumor was attached by scar tissue to the vagina

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at the site of the former incision. The fluid it cotnained was straw-colored. On the collapse of the tube I continued drainage for a few days and the woman went home well. She refused to have an abdominal section for the removal of this sac. It seemed to me that this last tumor was the result of the unremoved sac of the former ectopic gestation and that if I had done an abdominal section at that time she would have been saved any further trouble. It was this circumstance that prompted me to look up the record of the twelve cases of extrauterine pregnancy that I have subjected to vaginal section with the view of ascertaining what condition followed in the other cases, and therefore, whether even a successful vaginal incision was justifiable for this trouble. In this year (1897) I was very much interested in the question of vaginal section and operated upon five cases in this manner.

The fact that the diagnosis of extrauterine pregnancy may usually be established by the general practitioner in the early history of the case makes it possible to do a radical operation before a rupture and the consequent danger to life. The records of this society show that since its beginning there have been twenty-five articles on extrauterine pregnancy presented by its fellows. On examining these articles one is struck with the fact that in a very few instances, especially in the early days, even after it was well recognized, was the diagnosis made until rupture had occurred. If rupture occurs in the majority of cases somewhere near the twelfth week it is not strange that in these days so few cases are recorded of advanced extrauterine pregnancy, and almost none in which the fetus has gone on to development as long as the fifth or sixth month, or even longer. Many cases are reported in the early volumes of our TRANSACTIONS in which such time had elapsed before any operative interferences had been made.

Since 1897 I have had but one case where the pregnancy was well-defined extrauterine pregnancy, that had gone on

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as far as the sixth month. In this case, however, the sac ruptured at the third month and the woman came near dying from shock and hemorrhage, and went on to a condition of mild sepsis which had lasted nearly three months when I saw her. The early history of this case was characteristic of ectopic gestation and would hardly have escaped the attention of an ordinary physician.

This woman was the wife of a very poor man, a German, who supposed that she had consumption, and the doctor who had seen her had given her very little attention. When I operated on her she was feeble and exhausted, and I opened through the vagina, emptying out pieces of bone and as much as three quarts of septic material. She made a good recovery, and two years afterward was found to have a movable uterus, without any evidence of any serious trouble in the pelvis, and, therefore, satisfied me that septic cases seen a long time after rupture could be managed in this way, perhaps as well as by abdominal section.

In the twelve cases that I have to report there is nothing very striking in any of them excepting one, which I shall later take the liberty of briefly relating. They were all seen before rupture had taken place, and some of them as early as in the eighth week. In all the cases the incision was made most cautiously into the sac, the finger being used to open into it, and the contents examined before the finger was wholly withdrawn, so as not to lose the landmark. In no case was all the blood emptied at the time of the incision, but gauze was carefully passed into the opening and very firmly packed so as to prevent hemorrhage, and allowed to remain for a week before removal. I believe that in this way hemorrhage is certainly avoided and the operation is almost trivial in its consequences.

When I am not certain as to the nature of a small mass lying close up to the uterus, it has been my custom to be sure that the contents of the sac was not blood before I have allowed

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free evacuation of the mass. If the finger is once taken out of the opening it is extremely difficult, in the presence of the hemorrhage, to find the one opening in the sac that you want for the purpose of putting in a tampon quickly enough to control a hemorrhage. None of these twelve cases were operated upon after the third month. The diagnosis in each instance was made comparatively certain before the operation, and was verified afterward by the presence of chorionic villi. In two of these, pregnancy occurred after that time with a normal delivery and a living child. No miscarriages have been reported in any of the cases, and in none of the twelve has there been any pelvic disease, nor is there any at present apparent. Menstruation has been normal and there has been perfect health.

In one case that was sent to me last year for operation for ectopic gestation, I made the error of confirming the diagnosis mainly on the history, though the physical examination showed a mass close up to the uterus on the left side which seemed to me larger than an extrauterine pregnancy of two and one-half months ought to be. There was found in the scrapings from the uterus some membrane containing placental remains. After curetting, all the symptoms ceased excepting the pain in the left side over the tumor. This tumor I removed by abdominal section and found it was a dermoid cyst containing a roll of hair about as big as an orange. This patient remained well until April of this year. She was a woman of twenty-eight who had been trained as a nurse and had been married about two years and after her operation resumed her work as a nurse. Her period did not come on the first of April last and her physician examined her and found nothing wrong and said that she was not pregnant, but the delay was due to some trivial circumstances, and she went on with her work. In a few days she began to have a slight discharge of blood and ten days later while at her work she had a sharp pain which

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lasted four hours, accompanied by profound shock and followed by the presence of a slight mass in the right tube, discovered for the first time by her physician. She returned home and remained in bed and had a very slight uterine hemorrhage most of the time, and on the third of this month had another sharp attack of pain with collapse from which she did not speedily rally. Her pulse became more rapid and her temperature ran up to 101°. On the evening of the same day I saw her. She had a very rapid feeble pulse and a doughy mass in the pelvis and every evidence of profound hemorrhage from a ruptured ectopic gestation. This was only four weeks from the time that she ought to have menstruated regularly and failed to do so. I opened the abdomen under very unfavorable circumstances in the night, and practically without any light to guide me, clamped the broad ligament (I could not put on a ligature), removed the mass, and tamponed the cavity, leaving the opening to drain. She has made a good recovery.

A small dermoid cyst close down to the uterus, which causes pretty sharp pain, feels a good deal like a distended broad liagment and might easily mislead one in making an early diagnosis of ectopic gestation; but I can hardly think of any other circumstance that would do so if a fair history of the patient can be obtained. Therefore, I believe that the early operation, before rupture of the tube, can generally be done, and that the physician in charge of these cases ought now to be sufficiently familiar with the signs and symptoms of this disorder to recognize the condition and to call the attention of the surgeon to the matter before rupture has taken place.

The fact that the cases operated upon early leave almost no trace of anything wrong in the pelvis afterward, and that the operation is so safe and so certain in its results, have impressed me that this society should urge early diagnosis and early operation of all cases of extrauterine pregnancy.

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Is it possible that the profession is becoming so enamored of techinque that it is losing the advantage which can be secured by obtaining a rational history that would point toward possible dangers before an expert is called? Expertness with the fingers that may give a good technique ought not to overshadow that mental expertness which will enable the general practitioner, by carefully eliciting the rational signs of sickness after an exhaustive history has been obtained, to come to a fairly correct opinion.

Expert operators are not the ones who first see the cases of extrauterine pregnancy. A correct physical diagnosis is of the utmost importance in surgical matters as well as in purely medical affairs; but it is not always possible to secure this by the men who first see these cases.

Inexpert physical examination may lead a man much farther astray than if he relied upon the subjective symptoms.

If the teaching in the schools be so modified as to impress upon the medical students a more careful consideration of the subjective symptoms, until still enough has been acquired to enable the verification of the diagnosis to be made with certainty, I am sure that these cases of ectopic gestation would be seen early enough to be operated upon before rupture and hemorrhage have occurred.

DISCUSSION.

Dr. Fernand Henrotin.—I have two or three professional friends in Philadelphia who say that I am responsible for vaginal work, which they do not like, and whenever a subject of this kind comes up, I like to place myself on record. I am willing to be responsible for what I have done, and I have on one or two previous occasions put myself on record with regard to this subject. We have a distinct example here of a procedure which is of the very greatest value; but from the manner in which Dr. Ford puts it, he does not do the operation justice. The

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fact of it is that vaginal incision is a proper procedure in selected cases of extrauterine pregnancy and in the exact light in which a distinction should be drawn, namely, the life or death of the fetus. Personally, I do not consider it is ever proper to attempt to treat a case of extrauterine pregnancy where the fetus is alive by vaginal incision. I have had occasion to make that statement many times. We cannot be sure of controlling hemorrhage. And Dr. Ford has given us an example. There are undoubtedly other gentlemen here who will fortify the position I have taken by giving practical examples of the same thing—the great danger from hemorrhage, and Dr. Ford told us of the difficulty he had when he took his patient away from the table in a fainting and almost collapsed condition. If Dr. Ford had not been a vaginal operator, who is used to that work, if he had not been skilful, and if he had not been level-headed, the patient would have been in great danger when taken from the operating table. The fact of it is, we are not in a position to control hemorrhage in these acute active cases.

Another thing: The doctor spoke in a rather indefinite way about unruptured cases. He has not given us evidence in his paper that these cases were unruptured; and the good results he had obtained were largely due to the fact that the ovum was already dead in the majority of them, and he operated on hematocele in the broad ligament. That is one of the satisfactory operations—to make an incision behind the cervix, split the broad ligament, and clean out the hematocele and the blighted ovum. It is a trivial operation, one that is attended with or followed by no symptoms, and it is perfectly ideal. On the other hand, if you open the sac where there is a live fetus, with active circulation going on, when you take away your finger there is a rush of blood, and the dangers incident to such a procedure are great. So I feel like sounding a note of warning, that the teaching of this paper should be taken carefully into consideration; that it is not in my opinion the proper thing, if we would get good results, to ever operate upon unruptured cases of extrauterine pregnancy by vaginal incision when the ovum is alive. When once the ovum is dead and the vessels blocked up, you can do so with perfect safety, and it is an ideal operation. I have removed babies of all sizes when dead through the vagina. Once, in a seven months'

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pregnancy with the placenta attached to the anterior wall, where I could feel the presenting head below, I made a vaginal incision and delivered the woman with very little trouble comparatively by version. Introducing the hand through the incision, exposing the fetus through the vagina, I had the satisfaction of delivering the woman very quickly. The child was dead. The woman was pulseless, and died within two hours. This procedure, a very poor one, I have discarded; yet it seemed to me at the time it was the only way I could have dealt with the case on account of the attachment of the placenta to the whole anterior wall of the uterus.

Briefly, then, I would say distinctly and positively, that vaginal incision, unless you are sure of the death of the ovum, is a very dangerous procedure.

Dr. T. J. Watkins.—It seems to me, we are all of one mind in the treatment of neglected cases of hematocele due to ectopic pregnancy that become infected. They are ideal cases for incision and drainage, and I believe that is the class of cases Dr. Kelly dealt with in his paper before this Society some years ago.

I want to take issue with Dr. Ford relative to the diagnosis of tubal pregnancy. The study of these cases as they come to the hospital has shown to me that they are the most difficult for diagnosis in gynecology. It is absolutely impossible to distinguish between some cases of tubal pregnancy and some cases of pelvic infection without an exploratory incision. We frequently see cases in which these conditions are associated. With the hospital records, a careful history, blood findings, etc., it is not always possible to distinguish between the two conditions without abdominal section.

Dr. Ford did not make clear what he meant by opening and draining these cases before rupture. If one makes an incision through the cul de sac and punctures a pregnant tube before rupture and scrapes out the tube, it means tearing the wall considerably, and if the tube is scraped out it is impossible to pack that tube without grasping the edges of the puncture and carrying gauze into it. That certainly would be difficult to do through a post-cervical vaginal incision. In cases where we have made abdominal section and cleaned out the tube before rupture and tried possibly to preserve the tube, we have found how difficult it

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is to stop hemorrhage, and it is usually unsafe to leave such a tube as that and rely on drainage on account of hemorrhage and pathologic sequelæ. It would seem in all of the cases of tubal pregnancy, save those of neglected infection and hematocele, abdominal section and extirpation of the tube itself is the ideal operation.

Dr. I. S. Stone.—Dr. Ford has given us a useful paper; and Dr. Henrotin has told us how not to do vaginal incision and establish drainage in these cases of extrauterine pregnancy. I felt that way when Dr. Ford was concluding his paper and when he reported a case of hemorrhage, and I said to myself a man must have a very level head to undertake to treat a case of acute hemorrhage under such circumstances.

It seems to me, the use of a large amount of gauze in any case is a confession of failure of surgery, I do not believe any surgeon has the right to use gauze as a packing to check hemorrhage when he can use a ligature, a suture, or even the cautery. To those who advocate the use of the cautery, I will say it is all right; but when we have the facilities that have been pointed out by Duhrssen and many other operators, and can reach any bleeding point either anterior or posterior to the fundus of the uterus, we ought to do it and not let a patient go to her bed bleeding through the piece of gauze used in packing.

Dr. Watkins has covered the ground well as to the advisability of operation. We know in a number of instances the broad ligament does not contain the fetus and membranes; it does not always contain a hematoma. There are a number of cases of tubal abortion, with hematomata forming, after the rupturetof the tube, behind the tube in the pelvis.

It is impossible to tell whether or not you have a rupture in the broad ligament, even with the cul de sac open. Therefore, if we pack a large amount of gauze into a sac with an adventitious covering, instead of broad ligament, we may rupture it and cause additional hemorrhage.

Dr. Matthew D. Mann.—I think the rule laid down by Dr. Henrotin is all right, and I do not believe in operating upon these cases, as a rule, through the vagina where the fetus is alive, and yet there may be an exception occasionally. My first experience in this line was disastrous. I reported the case to the Society a number of years ago, where I operated through the vagina following a

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paper read by one of our members, which gave me the idea it was a good thing to do. After removing the fetus and clots I packed the vagina and left the patient, as I thought, in good condition. After I had left the hospital she had another attack of hemorrhage. The house surgeon packed at once, but the woman died. In that case, if I had been called immediately, I should have opened the abdomen, and believe by so doing I could have saved her. That case made me cautious about operating through the vagina, and I have been opposed to it since except in cases of infected hematocele.

Not long ago a patient came in upon whom I thought, on account of certain conditions, I could operate safely through the vagina. She had a retroversion of the uterus. She was wearing a pessary. I knew her pelvic organs well from previous experience. She came in one day, after a short interval from her previous visit, and said the pessary was hurting her. She was uncomfortable. I examined her and found the pessary in place. Behind the uterus was a small round body, tender, never there before, and she said she had missed her last menstrual period. She had some slight symptoms of pregnancy. She thought she was pregnant. I made up my mind at once there was tubal pregnancy. I opened through the vagina, slipped the thing out, tied it, and cut it off. It was a tubal pregnancy entirely unruptured. It was a very good specimen. Here was a case which illustrates that occasionally we may operate through the vagina.

A little while ago a patient came with extrauterine pregnancy It was a perfectly clear case. It had ruptured, and I thought it had reached the hematocele stage. I opened through the vagina the infected hematocele and encountered a frightful hemorrhage. The woman nearly died. I opened the abdomen quickly, got at the sac, stopped the hemorrhage, and saved the patient. It was the quickest laparotomy I ever did. The hemorrhage was frightful.

I saw another case quite recently where, acting on that experience, I decided not to open through the vagina, and I am glad I did not do so. The patient was the wife of a physician. She had tubal pregnancy. She was taken suddenly ill while playing on the piano. She collapsed, but recovered in a few hours. On examination I found there was a smooth, tender

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body behind the uterus. I thought it was an extrauterine pregnancy. She had cast off a decidua, which had been mistaken for an abortion. I did not want to have the same experience I had before. I opened the abdomen, found an unruptured tubal pregnancy; but the sac was filled with clots. No blood had escaped. I removed it without any trouble. There was a big artery on it and veins, and I am sure if I had opened through the vagina I should have had another terrible hemorrhage.

I think exceptional cases are very rare where we can operate through the vagina. It is much better to go in from above, and only in cases in which there is infected hematocele by the vagina.

DR. SETH C. GORDON.—I believe the first rule of surgery is to save. I heard Lawson Tait say before a meeting of the British Medical Association that no man ever made a diagnosis of extrauterine pregnancy before rupture, and I think Dr. Kelly was present when he said that. In a great many cases of extrauterine pregnancy the diagnosis has been made before rupture has taken place. I did the second successful operation for extrauterine pregnancy in this country. Thomas said at the time it was the first one, but Arthur Johnstone, a year before, did the operation successfully. This case was diagnosed by a former student of mine twenty-four hours before I operated. He telephoned me "I think I have a case of extrauterine pregnancy; be prepared to come at a moment's notice." Later in the evening he telegraphed: "Case has ruptured; will try and hold it." The next morning I operated, removed a three months' fetus, and the patient got well, the second one that recovered in this country.

In my judgment, no man has a right, if he makes a diagnosis of extrauterine pregnancy, to attempt to remove it through the vagina. I do not believe it is possible for any man to do as good work through the vagina in cases of this sort as it is through the abdomen. In the first place, you have an exceedingly sensitive tube to deal with; it is almost ready to rupture—otherwise your attention would not have been called to it, and you cannot turn that tube out and remove it through the vagina as well as through the abdomen.

This Society should not go on record to the effect that vaginal

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work is to be done regardless of what the conditions may be. It would be a bad impression to create, because young practitioners would go on doing this kind of work and would say that they can do any kind of an operation through the vagina. It is not safe surgery, which is the only groundwork for good surgery.

DR. J. RIDDLE GOFFE.—I think the condemnation of vaginal work is largely due to the fact that when men speak of operating through the vagina they mean opening into Douglas' pouch. It seems to me, this is condemning the vaginal route from altogether too narrow a limit. To my mind, there is no method of approach so direct, so simple, as the vaginal route in ectopic pregnancy. When I speak of the vaginal route, I mean opening through the anterior vaginal fornix. If you simply make an opening into Douglas' pouch and depend upon the consistency of the tube to drag it down and get at it where you can apply a ligature, you are doing a dangerous and desperate piece of surgical work. When you open through the anterior vaginal fornix you have everything in your hand, so to speak, and under your eye, and you are following the most direct route possible to reach the conditions.

Let us consider the blood supply to the tube. We all know what that blood supply is. We do not want to reach large vessels coursing over the sac; we want to get at the main supply and find the ovarian artery. With a free opening in front of the uterus we have the broad ligament entirely under control. It is an easy matter to apply forceps at the external end of the broad ligament and control the ovarian artery. It is an easy matter to apply one near the horn of the uterus to control the reflex supply. We have a dry field. You can take time to remove the tube, and it makes no difference whether the tube ruptures or not, you have the blood supply controlled. The question is, in what cases shall we do the vaginal operation? I think it is granted, that if we have a suppurative condition there, with a dead fetus, the most direct route of attack is through the vagina, whether we operate through an incision in the cul de sac of Douglas or the anterior fornix. I think we are all agreed as to that. When it comes to a living fetus, where we have made an early diagnosis of ectopic gestation of less than the third month, to my mind

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it is the simplest procedure in the world to make an incision in the anterior vaginal fornix, to apply ligatures, and remove the tube intact. I have done it without any trouble whatever, without hemorrhage, without any untoward or alarming symptoms, and my patients have made perfect recoveries. I have in mind one case in which I removed a living fetus in the tube, and the woman has since borne a child from the other side. When we have reached the condition of seven months' ectopic pregnancy, as referred to by Dr. Henrotin, it is a very delicate question, and I must confess that I am not competent to decide it. It seems to me, however, when we consider the number of patients who have gone on to full term, one is not justified in interfering with a seven months' pregnancy. When the mother has furnished the proper nutritive supply to the fetus, and has carried it along to the seventh month, there is, so to speak, accommodation for the fetus until it reaches full term, and then we may have a living child, and I do not see why we should interfere in such a case, especially if we have had that case under observation. While I have not had such an experience, I think that is the proper procedure under the circumstances. But anything under three months; if we can diagnose an unruptured tube at that time, we have the most direct, the most simple route of attack through an anterior vaginal incision, and the dangers of hemorrhage are not as much to be feared as they are or would be through an abdominal incision. The tube can be removed with its contents and the incision closed. If we find it desirable, the tube can be conserved. Careful conservative work can be done through a vaginal incision with as little danger and with as great facility and rapidity as it can be through an abdominal incision.

Dr. Charles P. Noble.—I have positive convictions on this subject, as I stated my own experience last year regarding it before the Pennsylvania State Medical Society, and I am glad to have the opportunity to say something about it now. I think we are all agreed that the way to treat septic hematoceles is by an incision through the posterior fornix. My experience, however, is that in one-half of the cases I have so treated, subsequently I had to do abdominal section to remove the diseased tube. Therefore, while this is the safest way to deal with septic

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hematoceles, it does not effect cures in more than 50 per cent. of the cases.

I recently had an experience in operating through the vagina, which, if my convictions were not already formed, would have influenced me materially. In this case it was supposed that I had to deal with an inflammatory condition, whereas it was a ruptured tubal pregnancy. I opened into the posterior fornix, and before I could get the abdomen opened and bleeding stopped, the hemorrhage was so profuse that the woman died.

With reference to how to deal with the tubal abortion cases, I will say that I have operated on eighty of these, out of perhaps a hundred altogether, and my experience is that with this type of cases, operated on by abdominal section, there was one death in somewhere between eighty or ninety cases. This woman had both consumption and Bright's disease. She died of acute uremia. By the abdominal route in this class of cases we can practically cure every one of them. The mortality is about zero. Here, we have again the old proposition or question of a diseased tube remaining after turning out the clots. If one-half of the septic hematoceles will have a diseased tube left in, I am satisfied a goodly percentage of the cases in which clots are turned out will have a diseased tube requiring subsequent operation. By doing the abdominal operation, getting rid of the appendage at the time of operation, we save certainly one-third of these women from secondary operation. My experience is that the only fatal cases of ectopic pregnancy are the ones that have rupture near the uterus, where they practically bleed to death before we see them, or they have had a number of hemorrhages from delay and are moribund.

PROF. M. DUHRSSEN.—I have been much interested in listening to the remarks of the preceding speakers. I agree with Dr. Goffe in regard to the distinction he has made between vaginal puncture and vaginal incision or section. One is totally different from the other. In a case of septic hematocele incision and evacuation of the hematocele is a good thing; but in these cases, as has been pointed out by Dr. Mann, it is well to be prepared to do a laparotomy, because there may occur a violent hemorrhage in these cases which can only be stopped by abdom-

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inal section. I agree, too, with Dr. Noble that in many of these cases in which we have emptied the hematocele, it is later necessary to take out the diseased tube, and I always inform my patients in cases of infective hematocele, that it may become necessary to do later a second operation. I believe the case reported by Dr. Ford shows clearly that posterior vaginal incision in cases of tubal pregnancy is a very dangerous thing, as is also extirpation of a tubal pregnancy through the posterior cul de sac. As Dr. Goffe has pointed out, it is a very different matter, extirpating a pregnant tube through the anterior wall of the vagina and through an incision in Douglas' pouch. I did this operation in 1895, and reported two cases at the time. In these there is very little fear as regards hemorrhage. You can bring out not only the uterus, with clamps, but the tubes, and can tie the connection of the tube with the uterus, and if you drag down the ovary and the tube, you can reach the infundibulo-pelvic ligament and tie it. It controls all hemorrhages, and if you put some sutures through the broad ligament, you can remove the pregnant tube without any further hemorrhage. I had the opportunity of operating in New York on two such cases of tubal pregnancy in the first month. I only wish to speak of cases of tubal pregnancy in the first two or three months. Recently I have recommended always abdominal incision, as I think it is not a good plan to conserve such a pregnant tube or allow the case to go to full term, as I believe was pointed out by Dr. Goffe. In Germany, we have followed the advice of Veit, who has said that every case of unruptured tubal pregnancy should be considered like a malignant growth, and should be removed immediately after the diagnosis is made.

A word or two with reference to the diagnosis. It is difficult for the general practitioner to make a diagnosis in these cases. We can teach general practitioners that in these cases of swelling they should not attempt curettement of the uterus, as is so often done, but resort to bimanual examination. However, as gynecologists cannot always make exact diagnoses in these cases of unruptured tubal pregnancy, it becomes necessary to resort to incision in order to establish the diagnosis sometimes, and in these anterior colpotomy is a convenient operation, because if there is nothing but a tubal pregnancy, one will have

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done no harm by the operation, and the patient has not had the fear of a major operation like an abdominal incision.

Dr. Henry P. Newman.—I wish to speak of one point in regard to the operation for ruptured tubal pregnancy. We should distinguish between hematoma and hematocele in the selection of our method. Bleeding in the free peritoneal cavity is one thing and that in the broad ligament or hematoma is another. I agree with those who condemn operating through the vagina where there is a living fetus except in a very limited number of cases of early pregnancy, in accessible situation, and also where the hemorrhage is into the broad ligament. In this latter case the vaginal route is comparatively safe and much easier than abdominal section

Dr. Philander A. Harris.—I hope Dr. Ford will state whether these cases were operated upon through an anterior or posterior vaginal incision. I think he should also state in how many of the cases he has reported, hemostasis was effected in a satisfactory surgical manner, and if he relied for hemostasis upon the packing of a rather loosely walled hematocele sac, or the distended broad ligament, with no firm wall behind or above it. In the reading of his paper he has evidently omitted portions of it. I presume these portions relate to points of which I am enquiring.

Dr. Ford.—I related one case of infected hematocele as showing what I thought was the best thing to do after hemorrhage had taken place; I had no idea that the Fellows would interpret my paper as advocating operation through the vagina in all cases. I did say, however, that in cases of infective hematocele it was a safe thing to do. I got a hemorrhage from a ruptured case in 1897, when I was beginning to do vaginal work. As to the other cases, all I want to say about them is this: They were twelve in number, of very early ectopic pregnancies. I did not know in every case they were ectopic pregnancies. I think it is a good thing in all cases of vaginal section not to take the finger out in order to turn out the clot, or to curette such a small sac, until you know whether there is any blood in it or not. I do not do that either in operating through the anterior fornix or a posterior vaginal incision. I never take my finger out of the smallest hole until I know whether there is any blood in the sac or not.

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I did not turn these clots out in order to curette the tube, nor in any way evacuate it. I left my finger in the opening and placed a piece of gauze firmly into the opening. In looking these cases up after two years and finding what perfect recoveries they made, I was rather surprised to find no adhesions. I think it is a good deal more risky to operate on hemorrhagic cases through the vagina than through the abdomen. I always operate on them through an abdominal incision. I would like to impress upon the general practitioner the importance, wherever a patient has a small swelling, with a history of ectopic pregnancy, before he is able to make diagnosis in his own mind, of sending such a patient to a surgeon, because vaginal incision in the way I have spoken of will in a few of these cases, before rupture has taken place, give exceedingly good results.

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A REVIEW OF THE SURGERY OF THE FEMALE PELVIC ORGANS.

By S. C. Gordon, M.D., LL.D.,
Portland, Me.

To one familiar with the surgery of the female pelvic organs for the last twenty years, it is apparent that many changes have taken place, and the present seems a timely period to "take an account of stock," to use a commercial term, and find where the consensus of opinion lies as between what was known a score of years ago as the "radical" surgery and what has been known within the past ten years as the "conservative" surgery of these organs. The prime object of all surgery is to cure the patient, "for this are we doctors," and especially for this are we surgeons, and we but illy answer the demands upon us as professional men unless we bring to our work in this direction our best efforts toward giving to our patients not only the most skilful technique in surgery, but our best judgment as to the pathology, and the still more important factor of what portion shall we remove of diseased tissue in order that our patient may recover, wholly or in part, a normal condition of health which had been impaired by the abnormal condition of the pelvic organs.

The young surgeon, beginning his work twenty or twenty-five years ago, found the prestige of such names as Battey, Tait, Hegar, and many others in favor of removal of the uterine adnexa for various symptoms that were believed to be due to the ovaries and tubes while still in the normal

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period of functional life. None of us who knew these men, for one moment, doubted their honesty and sincerity or questioned their ability to properly investigate pathological conditions, and deduce logical sequences from the relation of such pathological conditions to the train of symptoms found in any given case. In America no one had the confidence of the entire profession to a greater degree than Battey, a man of unimpeachable integrity and indefatigable industry, who brought to his work an unprejudiced mind and a close observation of every detail before advising operative measures. He found many of the intense reflex symptoms, such as hysteria, insomnia, faulty digestion, and a long train of neurotic symptoms, traceable to disordered menstrual function, and believing that an artificial menopause would, in time, effectually remove these manifold ills, the operation of what was erroneously called normal oöphorectomy was done. That this operation was in the highest degree beneficial in most cases and entirely curative in a very large percentage of cases, in the experience of Battey there is no reasonable doubt in the minds of his contemporaries. His reports from year to year were characterized by a fairness of statement as to cures, relieved, and absolute failures. His conservative estimates as to the applicability of the operation and results to be expected from it were models of medical literature in comparison with those of many men of far less experience, who operated without the care and skill necessary to a proper understanding of the principles so modestly enunciated by Battey. Had the operation been done only by men who had been faithful disciples of Battey, many less failures would have been recorded, and much less bitter criticism would have been indulged in by members of the profession who had absolutely no experience, and judged only from many of the cases that never should have been operated at all. Another and very grave error, and one which tended to

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bring the operation into disrepute was the promises made to the neurotic class of cases, as to prompt and early relief to symptoms under which they had suffered. While the pathological condition and urgent symptoms were in the relation of cause and effect, sufficient allowance was not made for the time necessary for the complete restoration to health of a system which had been impaired by long-continued suffering. Pain, insomnia, and malassimilation had wrought such changes in the nutrition and nerve centres that time only could complete the cure even after the cause was removed. The effect does not always promptly follow removal of the cause. Ultimate recovery in many of these cases illustrated the truth of this. Failure to recover according to promises led many patients to declare that the operation had been of no benefit to them, thus discouraging others to whom it would have been of incalculable value in the hands of a competent gynecologist who would have been less profuse in promises and much more discriminating in choice of his cases for operation. The "craze for operating" took possession of the surgical world and every young man ambitious for renown in this fascinating department of medicine, "fleshed" his maiden knife in the abdomen of some confiding victim to inexperience and immature judgment. Another, and in my opinion, very potent cause of failure to effect a satisfactory result lies in the fact that in removing the adnexa the uterus was not removed. This is a question which is to some extent still sub judice, inasmuch as men of large experience believe that it is unnecessary, claiming that no organ should be sacrificed that can be avoided. Many of these cases of removal of the ovaries had more or less pelvic exudate which kept up a state of chronic passive congestion—other cases had varicose veins of the broad ligament which induced the same condition, causing pain and a feeling of weight in the pelvis with local and reflex symptoms that made her a constant invalid. In nearly

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all these cases the uterus had the same complication and remained a source of future trouble until removed. In many instances the uterus was the point of infection and still remained a nidus for future attacks of inflammation or congestion. Too often the infective germ was either a streptococcus or gonococcus, which does not become sterile so readily as the other forms. Aside from all these considerations the fact exists that the uterus, after the ovaries are removed, is an entirely useless organ having no function whatever, and having the uterine artery pumping blood into it from each side while the varicose condition of the broad ligaments prevents a prompt and normal return of blood through them.

I have never yet found a gynecologist or general surgeon who has been able to give other than a purely sentimental reason for leaving this useless bag. There certainly can be no scientific or logical reason for it. With all the pelvic organs in place and in normal condition the principal function of the uterus is providing for the proper development of the fetus and its gestation until parturition takes place. On the contrary, removing the uterus and leaving a part of one or both ovaries has been found more or less beneficial, at least this is quite generally believed by many of the most experienced gynecologists and general surgeons. In fact this was one of the first steps in the so-called conservative gynecology. It is believed that retaining the ovary or ovaries supplies something in the human economy which tends to limit the nervous disturbance which follows in some of this class of cases. Another reason for complete hysterectomy is that in a small percentage of cases menstruation is kept up after the oöphorectomy has been done. It was first believed that this was due to an imperfectly performed operation and that a small portion of one or the other ovary must have been left behind.

Dr. Arthur Johnston, of Cincinnati (recently deceased),

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after much experimenting upon the lower animals and observation of cases where menstruation followed oöphorectomy, propounded a theory that the seat of menstrual function lay at the horn of the uterus, and if the tube was removed so close to the uterus as to include a portion of the cornua, that the function must cease. To a certain degree it was theoretical; it could not actually be demonstrated. It was also believed by Tait and others. My own practice for many years has been to remove the uterus whenever for any cause I was obliged to remove the ovaries and the result has fully justified the action, in comparison with former results, where I did not do it.

The unsatisfactory condition remaining after so many operations for so-called oöphorectomy, due to the various causes named, decided several prominent gynecologists to adopt a different method of treating these organs, where the operator fully believed the symptoms found were due to diseased adnexa, and the period of "conservative gynecology" began. Foremost in this work were A. P. Dudley and W. H. Polk, of New York, the former having done an immense amount, which has recently been presented in a very voluminous report at the International Medical Congress at Madrid in Spain two years ago. In more than a thousand cases, he carefully noted the condition found and his methods, as far as possible giving results which in quite a large percentage of cases were very satisfactory. Dr. Polk, in a less number reported, made equally encouraging statements as to cure of symptoms and gratifying relief from suffering. Of course, this work was largely experimental, and the early reports were so announced as time alone could determine what was to be the ultimate value. The prime object of this "conservative" work was to conserve organs, or parts of organs, so far as they believed it to be consistent with the future welfare of the patient. Had the profession generally waited until these men and some

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others could have had time to verify their experience by close observation of their cases, much more good and much less harm would have come out of it. But in this experiment, as in that of "normal oöphorectomy," everyone was desirous of doing something for himself, and the same or similar fruits followed. "Resection of ovaries and tubes" became the fashion, and regardless of the pathological condition the operation was done by men who had not even had a "six weeks' course" at a postgraduate school. This was much more disastrous than complete removal in many instances, and the last condition of that woman was infinitely worse than the first. The reason was not at all difficult to find. It is well known that the infective germ in diseased adnexa is frequently the gonococcus or the streptococcus following abortion (criminal or otherwise). It is also well known that any attempt to operate upon such a condition, until the germs are sterile, is almost sure to awaken a fresh acute attack of inflammation resulting in death or extensive adhesions. If allowed to remain undisturbed until time can sterilize the pus, the opening new tissue can be done with impunity. A careful history of the patient, before deciding to operate, would have saved the operator subsequent mortification and the unfortunate woman a lingering invalidism or future abdominal section. The difference between a case of this kind and one where a much less virulent germ was the cause make the difference between absolute cure and a far worse condition than existed prior to the "conservative" operation. To a surgeon familiar with one of these cases by actual operative work in a second abdominal section it is painfully apparent wherein the fault lay. Within a few months I have had a case in point where a "conservative" operation had been done nearly three years before, where a more careful inquiry would have proved that the cause was of gonorrheal origin. The pelvis was an almost solid mass of adhesions with an

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adherent omentum covering the whole. The woman had been a sufferer during the entire period covered by the three years. This is only one of many seen by surgeons familiar with pelvic troubles. The operation done primarily was removal of one ovary and resection of the other. The variety of operations under the name of conservative are numerous and depend entirely upon the inventive genius of the operator. A glance at the list of surgical operations of any large hospital will show the extent to which it is carried. Most of the patients are so scattered that few of them can be followed to learn the results. Dudley and Morris each transplanted an ovary into the middle of the body of the uterus, where the tube had to be removed from that side, and the ovary and tube of the other side were also sacrificed. Menstruation followed for many months, but no pregnancy took place as was hoped for, and principally for which the operation was done. The woman was a prostitute in this case and was a patient of Dr. Dudley's. Morris has never reported pregnancy, to my knowledge, under these circumstances. That these "conservative" operations have fallen far short of the hopes of the pioneers, is beginning to be sadly realized, and yet there is no doubt that they have done an incalculable amount of good in relieving suffering and rendering many women fruitful that had been sterile for many years. They have satisfied the sentimental objection that so many women have against losing the function of menstruation, even though attended by extreme suffering. That doubt exists as to the future of these operative measures is shown by the fact that one of the subjects selected by the council of the American Gynecological Society for discussion at the next meeting at Virginia Springs in May is entitled "Immediate and Remote Results of So-called Conservative Operations on the Uterine Appendages, Ovaries, and Tubes." The discussion of the subject will undoubtedly bring out the experience of the men who have

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been doing much of this kind of work. My own experience and observation lead me to the conclusion that in a great many cases the operation has been conservative of organs rather than of health, which is the sole object for which the woman seeks our advice and skill.

The treatment of fibroids of the uterus is still a live subject for discussion, and men are divided upon the question as to how far myomectomy shall usurp the place of hysterectomy. Hegar first propounded the theory of oöphorectomy, where the uterus contained one or more fibromas, hoping that an artificial menopause would stop the growth and gradually result in absorption. In his time the theory that the normal menopause generally accomplished this was believed in to a much greater extent than now. Facts have not justified the theory. That myomectomy has proved successful in many cases has been shown by repeated reports from some of the noted gynecologists of the world, notably in our own country. Especially is this true when a single tumor was easily accessible either by the vagina or abdominal section, but for multiple tumors involving both body and cervix it does not appeal to common sense or scientific theory. For young women of childbearing age and who are anxious for offspring, we are justified in carrying it to the extreme limit, but beyond this I am sure that the consensus of opinion is decidedly in favor of hysterectomy. Small fibroids may exist in a uterus where one or more have been removed that are almost certain to prove sources of future trouble and may require a second abdominal section. I can see no good reason for conservatism of such organs at the expense of good health. I have seen no cause for changing my views on this point since my paper read before the American Gynecological Society and the Maine Association and published in the transactions of each. It was a reply to a paper by Howard Kelly presented the year before at the meeting of the Gynecological Society. When

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we take into account the various forms of degeneration that may occur in the tumor; the inflammation that may arise in consequence of infection through the uterine canal; the well-known influence upon the heart, both as to fatty degeneration and hypertrophy, we shall not hesitate long as to where true conservatism points us in a surgical line.

I fully believe that all things considered that, with the exceptions named, a woman suffering from a fibroid of the uterus to the degree of requiring the services of a physician better have hysterectomy. I am sure that this opinion represents the best judgment of the best men of this country. When the woman finds herself in the condition above named, she begins a period of invalidism which will continue indefinitely until the cause is removed, which is a diseased uterus. The days of electrical treatment for fibroids have passed, and the names of Apostoli and Keith (who renounced hysterectomy for electricity and died disappointed men) will be remembered for other deeds they did, rather than for any great good with the electrical current. I regret to say that hundreds of practitioners are still continuing its use, even since it was given up by Apostoli. Drugs are now abandoned, except as a temporary expedient for hemorrhage, so we may safely say that surgery offers the only relief for myofibroma of the uterus and that hysterectomy is the ideal operation for permanent cure. All else are excuses for doing something, while some of the remedies offered are even dangerous.

Cancer of the uterus as it ordinarily comes under our notice (too late) is now best treated by curettement and cautery, as taught so long by Dr. John Byrne, of Brooklyn. The efforts of the profession today is to encourage careful investigation, so that the disease may be diagnosed in the early stages when hysterectomy may be done easily. Delayed hysterectomy for cancer has been very unsatisfactory, and in many cases has shortened life, so I believe I represent

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the consensus of the gynecologists of today when I say that to Byrne belongs the credit of having had better results than any published in medical literature.

Surgery for uterine displacements holds a very high place in the practice of the foremost men in the special work of diseases of women. While there are a variety of methods for securing the result of permanent fixation, or permanent relief to the displacement, the plan which supports the uterus by the round ligaments seems to meet with more favor than ventrofixation, which has been found to have many disadvantages. The Alexander-Adams operation is applicable to cases only where there are no adhesions, so that for several years I have done what is known as the Gilliam-Cousins fixation, which consists in bringing a loop of the round ligaments up through the abdominal fascia on each side of a median incision and stitching it to the fascia and closing the skin incision over it. The uterus does not touch the peritoneum, but swings by the round ligaments. Several cases operated by this method have become pregnant and passed through safely while those operated by the former methods of suspension have had more or less trouble. From my own experience and that of others, I am of the opinion that this is a much better method than any heretofore devised. Something may come that will prove better. The operations through the vagina, such as Macenrodt's and shortening the utero-sacral ligaments do not appeal to a majority of gynecologists of the present day.

Acute attacks resulting in pus in the tubes and ovaries should always be opened through the vagina and drained for a day or two by rubber tube. The matter of drainage has undergone a great change in a few years. For many years I have avoided drainage almost wholly, believing that it has very little value. If there is any fault in technique and infective germs are left in the pelvic cavity no form of

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drainage will remove them. An exudate surrounds all forms of drainage, even in a few hours, so that nothing beyond the immediate tube or gauze is removed. Twenty-four hours (except in case of a large abscess cavity) is all that is necessary to accomplish what can be done by drainage. A recent article in the Chicago *Journal of Surgery, Obstetrics, and Gynecology* represents what I believe is the best sentiment on this subject. It is a prize essay and discusses every known form of drainage. It is by Dr. Yates, of Chicago. He shows by repeated experiments that even in six hours the meshes of gauze become filled with the surrounding tissue, completely shutting off all discharge, while a certain amount of the plastic elements surrounds the enmeshed tissue as well as a rubber or other kind of tube. In a discussion of this question at the meeting of the American Medical Association in Detroit, twenty years ago, I contended that such a condition existed as above described, therefore, that drainage in abdominal surgery was practically of no use. The general sentiment, of course, was adverse to this, but fifteen years later some of the very men who took issue with me acknowledged that the position was right and that they had entirely changed their practice.

The conclusion of this hastily prepared paper may be stated as follows:

1. That the Battey operation was one that did an immense amount of good in the practice of men of experience and skill in operating. That the results in many cases were often delayed for obvious reasons. That undoubtedly much more harm than good was done because of inexperience in pathology and operative skill.

2. That the so-called "conservative" gynecology in too many instances was but a conservatism of diseased organs, in whole or in part, and not conservative of the health of the patient.

3. That the sentiment is already changing from this

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extreme conservatism to more careful consideration of the future condition of the patient, as instanced in a more general belief in hysterectomy for fibroids of the uterus instead of myomectomy.

4. That in resections of the adnexa regard should be paid to the history of the cause of the infection, rather than to the macroscopic condition, as the virulent germs produce changes that require total removal together with the uterus as the only safety to the patient.

5. That in malignant disease of the uterus, efforts should be made to discover it early, when panhysterectomy may be done to advantage. Advanced cancer must be treated tentatively by curettement and actual cautery. The extremely extensive operations of attempting removal of a wide margin around the uterus have proved unsatisfactory, with very high mortality and early recurrence.

6. That surgical measures for displacements are still sub judice so far as any agreement as to any special method.

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CONSERVATIVE OPERATIONS ON THE OVARIES.

By J. M. Baldy, M.D.,
Philadelphia.

The subject of conservative operations on the ovaries is so comprehensive that one must of necessity limit the field of consideration as much as possible, and of first importance in this respect is a common understanding of the word "conservative." The old surgical dictum to "save as much tissue as possible" is apparently the commonly accepted interpretation, and it is because of this that there seems to be such an irreconcilable difference of opinion by men of, in other respects, equal ability.

In dealing with the ovaries can we with full justification to our patients accept this interpretation? Without pretending to enter into an argument I must decline emphatically to do so in the limited meaning of the bare statement ("save as much tissue as possible") without qualification. That qualification must carry with it the necessity of removing all sufficiently diseased tissue, all apparently healthy tissue when it is justifiably suspicious that this is causing or will cause serious trouble, and even the whole ovary if by such a sacrifice the patient's life is rendered tolerable where before it has been intolerable. This practice is exceedingly broad and is open to great abuse either from ignorance or from knavery; but it must be borne in mind that I am addressing a body of highest authority in this country on these subjects and that there can be but one object to be obtained: the strict scientific truth. Let those abuse this

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truth who dare! Appeals to prejudice by declaring a woman to be unsexed because her ovaries are removed is worthy only of the ignorant, because such a thing as unsexing a woman in the sense that a man would be unsexed were his testicles removed does not obtain. What man of knowledge can say that a woman is a woman at forty and not a woman (unsexed) at fifty? And yet according to the argument of some, carried to its logical conclusion, during that interval the vast majority of women have become unsexed forsooth because they have been deprived of the use of their ovaries (by nature). Is the same woman any the more unsexed because artificially she has acquired the menopause a few years earlier than the average woman? Or is the woman in whom the menopause has occurred naturally at twenty-eight, thirty, or at any other period up to forty-five unsexed?

If a woman has contracted gonorrhea and ovarian abscesses follow, is she not sterile? Are we to be reproached for removing that which threatens her life or renders her existence miserable? If there be such a thing as unsexing her, has not the disease already done this?

Senile sentiment has no place in deciding what should be done in the presence of a diseased ovary. Nor is the anatomical limit of disease and health in this organ the only thing to take into consideration. It is a most difficult thing to tell what is and what is not disease in the ovary even microscopically, and in a very large number of instances it is necessary to decide the question by the symptoms and not by the make-up of the organ. Ovaries are punctured and resected daily for cysts, edema, atrophy and hypertrophy, and yet Ross long since called attention to the fact that these conditions may and do exist and are normal in that they most frequently give no untoward symptoms, as witness hydrops folliculi of the ovary, edema of the ovary (in pregnancy), atrophy of the ovary (following the menopause),

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hypertrophy of the ovary (accompanying fibroid tumor of the uterus). Does not everyone know that the so-called conservative is often most radical in the number of this class of cases upon which he finds occasion to operate? Even where symptoms and appearances go together, can one be blamed, in view of the literature of the subject, if he insist that in each individual case he be given the opportunity himself to judge between cause and effect before accepting the report as entirely accurate and of scientific value? As a matter of fact, conservative operations on the ovaries are so commonly mixed up with removal of adhesions, replacement of the uterus and other accompanying procedures that it is utterly impossible to distinguish between results.

Immediate results and end results are far different things; and as for that, end results are not even reliable. It is only by the survey of the whole case, general as well as local, together with a profound practical knowledge of human nature, as well as a sublime respect for the vagaries of women's nerves, that one can appreciate the full truth. Consider for instance the so-called moral effect of surgical operations. A young woman of twenty-four years of age was sent twelve years ago by a doctor friend, a half companion and a half servant to his wife. Had lived in his house for years; suffered in bed at menstrual periods for several days; had intermenstrual pain on left side, backaches, and pains running down thighs. Was becoming worse and worse. He wanted removal of ovaries. Finding no disease on palpation I demurred. He insisted. She insisted. Finally I consented to explore, provided the doctor would allow me and me alone to tell what had been done at the operation. I found the ovaries normal, as I expected, and closed the abdomen after merely looking at the pelvic organs. I informed the girl I had found a badly diseased left ovary and had removed it; that she would be perfectly well. She convalesced; later entered the training school for nurses of a hospital with which

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I was connected, took a hard three years' course and has since been in the practice of hospital and private nursing. She has never to my knowledge complained of a pain in the region of her ovaries, back, or thighs since the day of the operation. If this were an isolated case I should not mention it, but it is a condition you have all met many times, and I quote it merely to emphasize the fact that the nervous system is a wonderfully complex thing and that it must be taken seriously into consideration when estimating even end results in conservative operations on the ovaries.

How simple a matter in this case to have punctured the small cysts containing both clear and bloody fluid which dotted the surface of both ovaries; ovaries of a character which our so-called conservative surgeons are so fond of calling polycystic, microcystic, sclerocystic, sclero-microcystic, follicular degenerations, blood cysts, etc., *ad infinitum*, but which are nothing more nor less than normal hydrops folliculi such as are common to almost every ovary I have ever seen, normal or otherwise; at times buried in the depths of the ovarian tissue, at other times studding the surface of the organ. The so-called blood cysts are in the vast majority of instances corpus lutea in some one stage or another of their development. Corpus lutea containing bloody fluid and hydrops folliculi exist commonly in perfectly normal ovaries. Small uncomplicated growths in the ovary, such as these, give no symptoms whatever. In fact the entire absence of pain is one of the notable characteristics of all uncomplicated ovarian cysts, large or small. This being true, what amount of importance can be given to the theory that the pain suffered by many women is induced by the tension of small hydrops folliculi or blood cysts? And by what method is cure obtained through puncture of the cysts or by resection of the organ containing them?

End results are important, but even they are deceptive in that, just as radical cures are obtained by exploration without

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puncture, these results remain permanent in spite of the fact that the lesions (the relief of which is supposed to have accomplished the cure) return to even a greater degree than formerly, as witness: A patient twenty-five years old, with ovaries enlarged (sclerotic) and cystic (hydrops folliculi and blood cysts). Menstrual pain, in bed for two days, intermenstrual pain in back and thighs. Puncture of cysts with resection of half of one ovary on account of edematous condition. Complete cure for two years. Return for appendicitis, operation between attacks, appendix removed and ovaries examined. Resected ovary as large as original organ, as full of cysts and as tense as formerly; other ovary half again as large, cystic and extremely tense. Condition of ovaries worse than formerly and yet no return of symptoms.

This result is beyond question of common occurrence.

Again, end results are important in that large numbers are operated upon, the tensions corrected and no good or only temporary results obtained, as witness:

Patient aged thirty years, with similar symptoms to the above. Dilatation and curettage a year before; no result but becoming progressively worse. Examination showed normal pelvis with enlarged ovaries. Operation confirmed diagnosis. Numerous small cysts and a single blood cyst with extreme tension of capsule. All cysts punctured, blood cyst resected and sutured with fine catgut, ovaries shrunken and relaxed, tension entirely relieved. While in bed not a trace of old symptoms, facial expression clear, bright and happy, and daily claiming a complete cure. Within one month after return home she began a bombardment of letters filled with complaints and has since kept it up.

A similar case to the above, even to the prior dilatation and curettage. The same local conditions, the same procedures, with the same immediate results. The first three or four months at home perfectly well, happy, and enjoying life. Then a cold and the menstrual period, which came

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on two days afterward, painful as formerly. A letter announced the fact, but with the qualification that she was sure it was all due to the cold and everything would be right again. Now a year since and the same old story obtains. Such cases are only too common.

With the group of cases with no results; with those with temporary results; with those in which the results are permanent but the local lesions return with renewed force; with the cases cured by exploration alone; with almost constant temporary benefit to all these cases when put to bed and properly fed and nursed; with the cases gotten well by proper medical handling—can there still remain any doubt but that the vast majority of these women are neurasthenics and require no operation whatever? And can there be any doubt that the surgeon who finds constant occasion to operate on them is the most radical of the radical?

It is impossible for men to meet on any common ground when some deem it necessary to operate on conditions considered entirely normal by others.

Ovarian transplantations, the internal secretion of the ovary, and the leaving of a small piece of ovary after each operation, seem to be inseparably bound together—the men believing in the one believe in the other. Ovarian transplantation has proved a distinct disappointment; all the clinical evidence tends to support the supposition that the transplanted organ, whether homoplastic or heteroplastic, atrophies. The case reported primarily by Dudley as transplanted successfully, and the specimen obtained by hysterectomy later, by reason of the intense suffering, was shown this Society. The microscopic sections of this specimen disclosed an almost entire disappearance of all ovarian tissue from the seat of transplantation and was a complete and final demonstration of what becomes of such operations, an ending which had been foreshadowed by the clinical picture of these cases primarily. The result of this case also

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disposes in great measure of the theories of Holbarn and Knauer, both of whom believe that the internal secretion of the ovary not only prevents the atrophy of the other sexual organs but also exerts a marked influence on their development. The internal secretion of the ovary never was more than a theory and that theory is by no means strengthened by end developments. It has never yet been shown that any other organ of the body has more than one function. The function of the ovaries is reproduction of individuals. If the theory of internal secretion of the ovaries falls, as has that of transplantation, and the danger of a recurrence of growths in the portion of the ovary which is left after a resection is recognized (Ehrenfest alone reports five such cases; Fisher, Waldstein and others had similar experiences, as had the author), with them go the best part of the reason for retention of part of an ovary at each and every operation, leaving but two possible reasons for this procedure—the sentimental one of continuance of a bloody flow (which alone in itself is a filthy act) and the possibility of the prevention of the symptoms of the monopause. The question then arises, does the retention of a part of an ovary prevent these symptoms or are the symptoms worth preventing? It is a well recognized fact that all the nerve phenomena of the change of life will at times take place in a woman from whom but a single ovary has been removed. A certain definite class are consequently eliminated from these results.

As a patient approaches near the period of the natural change any mental advantage which might accrue to a young woman from the knowledge that she still had an ovary is lost in a still larger class.

The advantage of temporarily dispensing with the symptoms of the change is of no advantage at any age; every woman must pass through these symptoms, and as far as the mere symptoms themselves are concerned she had better take all her suffering at one time and be done with them for

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good and all, rather than find part of them hanging over her head indefinitely.

Omitting the mental effect of the knowledge of the loss of the ovaries (whatever that may be), my experience is emphatically against the routine effort to save parts of these diseased organs at any age. The mental effect on patients in but exceptional cases is exactly in proportion to the belief of their medical attendants and the degree of indiscretion with which they have discussed the matter with their patients. For my own part, I never put mischief into the heads of my patients by discussing pros and cons of the matter with them, and I find that with hardly an exception, a few years after their operations, they are well and robust, retaining all the attributes and appearance of women and *are* so in their own minds; content and happy, with about the same amount of regret that they cannot have children as people who naturally have never had any and who are reconciled to the inevitable.

There is one aspect of this subject which is almost universally ignored. It is this. A woman comes to the surgeon for relief from suffering; she is entitled to this relief, for which she confidingly places herself in his hands and for which she is paying her good money, irrespective of any theory he may have as to the possibility of future pregnancy, of the advisability of a continued menstruation or of his ideas as to the value of a supposed internal secretion of the ovary. She is entitled to a fair statement of facts and to judge for herself as to these matters. My own experience is almost unvaried. When I state that, in my opinion, such is the condition of her organs that the conservative procedure is to make an incomplete operation, removing a part and awaiting results, and then if a sufficient and satisfactory result is not obtained to proceed at a second operation to complete the removal, I am met with these questions:

Can you assure me I will be well after such an operation?

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Is there added danger to me in a second operation?

Will it be possible or likely that another tumor will grow in the ovary or piece of ovary left?

And by these objections:

I do not care to undergo the suffering of a second operation.

I am unable to bear the additional expense.

I have my children and do not care for any more.

The ones with me have caused me sufficient suffering.

I want to be well, and be well at once, if it is possible.

I want everything that is to be done to be done now.

As to the questions, who conscientiously can assure her? Who can blame her for the objections and who can deny her full right in the premises?

The whole object of a woman's life is not to have children; after she has done so up to the point of wrecking her life by ill health she is surely entitled to dispense with that function and relegate it to her more fortunate sisters if she chooses.

Putting the facts squarely before the ordinary woman, giving her full unprejudiced freedom of decision, in twenty-four cases out of twenty-five she will decide for a complete operation. The sentiment exists largely in the doctor, not in the woman, and the few who are influenced by it have been educated up to that point by the class of doctor who objects to the removal of the ovaries because he found on analysis of a group of cases that "78 per cent. subsequently suffered a notable loss of memory; 60 per cent. were troubled with flashes of heat and vertigo; 50 per cent. became irritable, less patient and some so changed as to give way to violent and irresponsible fits of temper; 42 per cent. suffered more or less from mental depression; 35 per cent. increased in weight and some became abnormally fat, etc., etc.;" his general intelligence being such as not to appreciate that the picture he draws, as one of bad results following faulty judgment, was merely the symptoms of the natural and

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inevitable menopause and which would in a short time leave the woman as surely as they came to her.

The great value we have obtained from our knowledge of the fact that a piece of ovary can be saved and functionate is not in saving it in every case, as a routine, simply for the sake of being able to say that the patient has an ovary, but in being able to do so in special cases where there is a desire for more children and where the good done outbalances the risks taken. And, after all, is there anything new in this? Have we not all striven for it from the beginning and have we not all practised it for years?

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FACTS AND FIGURES OF END RESULTS IN ONE HUNDRED CASES OF CONSERVATIVE OPERATIONS ON THE UTERINE APPENDAGES.

By W. P. Manton, M.D.,
Detroit, Mich.

One's point of view regarding any surgical procedure must be largely based on personal experience. A method which proves disastrous in the hands of one man and leads to its denunciation may, under a more careful selection of cases, a keener perception of conditions present, and a more finished technique, give rise to brilliant results and unstinted praise.

The conception of the term "conservative" as applied to the conditions under discussion may also vary with different operators and thus give rise to confusion. The definition accepted by the writer includes in its meaning all of those procedures directed to the ovaries and tubes in which the morbid process alone is removed, or so modified as to put these organs in the way of renewed physiologic health. This includes puncture and resection, but does not comprehend the breaking up of adhesions and the liberating of organs bound down by adventitious products.

From the above it is plainly evident that the question of benefits to be derived from conservative operations on the uterine appendages presents a problem difficult of solution which can really be answered only to individual satisfaction.

If it is admitted that the ovaries have their place in the economy, not only as the source of ovulation for procreant purposes but as purveyors of an internal secretion which is

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essential to the well-being of woman during the active period of life, then there can be no question as to the desirability and importance of preserving the whole or a part of these structures whenever the involving morbid process renders this possible. On the other hand, if it is assumed that beyond supplying the elements for the perpetuation of the race, the ovaries have no other function, their total ablation when diseased is clearly indicated. In the majority of cases of pelvic disease demanding operative intervention the carrying out of conservative measures cannot be considered, the condition having either existed too long or being of such a nature as to prohibt the saving of even a fractional part of the organ involved. There remains, however, a fair percentage of cases in which the disease is limited and in which the removal of the pathological process is possible without the destruction or ablation of the entire organ.

Whatever the attitude of mind regarding these matters may be, however, the ultimate results, whether the radical or the conservative operation be undertaken, are alone of value in determining the worth of either procedure.

In order to ascertain my own experience along conservative lines I have taken one hundred cases from my note books, the facts and figures from which I herewith submit.

Of the one hundred women there were: single, thirty; married, sixty-four; not noted, six.

The following operations were done:

On the Ovaries. Resection: both ovaries in seventeen cases; right ovary in twenty-six; left ovary in thirteen. Puncture: both ovaries in twenty-two cases; right ovary in eight ; left ovary in fourteen.

In nineteen women the ovary of one side was found to be so largely involved as to require removal; the right in six instances; the left in thirteen.

On the Tubes. Resection: both tubes in thirteen cases; right tube alone in four; left tube in seven.

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It was found necessary to remove one tube in ten of the patients—the right in four and the left in six cases. The opposite side was left untouched or resected.

Results. In the one hundred women the immediate results were entirely satisfactory; that is, all the patients recovered from operation and were relieved from the sufferings of which they formerly complained.

The mortality was therefore nil and the results temporarily perfect. The majority of these patients remained under observation for at least three months. Following this quarter year, sixty-one are known to be well at the present time, thirty-one have been lost sight of, five are doubtful—complaining of pelvic pain referable to the resected ovary, but in which no change can be detected on examination—and three have required a second operation for the removal of the conserved organ which had undergone, in each instance, further cystic degeneration. Of the sixty-four married women fifty-five, or 85 per cent., and of the thirty single women twenty-three, or 75 per cent., were well a year following operation.

Of sixty-four patients of whom knowledge was had a year or more following operation, forty-one are married. Of this number six, 14 + per cent., subsequently became pregnant; four of these were delivered at term, one aborted at the third month, and one is still enciente.

From this limited number of cases it appears that the conservative operations performed on the uterine adnexa have been followed with satisfactory and permanent results in more than sixty per cent. of those patients still alive and traceable. It is quite possible that among the thirty-one lost sight of, some may have relapsed and undergone operation at the hands of others. It is also equally possible that the majority have remained well and that some have borne children.

The results just noted demonstrate that the conservative

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surgery of the appendages where it can be properly undertaken is better surgery than total ablation, since it not only relieves from the suffering for which operation is undertaken and restores the patient to her wonted health, but it maintains intact womanhood, which in the single who may contemplate marriage is a matter of no little comfort and importance, and renders in all the possibility of future pregnancy. From the foregoing I maintain that my own statistics and those of others show the conservative surgery of the ovaries and tubes, having passed the experimental stage, has established itself as a legitimate and successful operation in all the conditions to which it may be properly applied, and that it should be the operation of choice in all instances during the childbearing age where the diseased state of the organs admit of its employment.

DISCUSSION ON THE PAPERS OF DRS. GORDON, BALDY, AND MANTON.

Professor M. Duhrssen was asked to open the discussion. He said: According to my experience with over a thousand cases of conservative operations on the ovaries and tubes, the results, both immediate and remote, have been very satisfactory.

If permanent success after conservative operations on the adnexa is to be attained, care must be taken to remove all pathological conditions of the genital organs, and especially those of the uterus. Inflammatory conditions, or displacements of the uterus, lacerations of the cervix, have an irritative action on the adnexa, and make the success of the operation an illusion. This postulate is often neglected by our German surgeons, who practice chiefly ventral operations. Vaginal celiotomy, which is the proper operation in 80 per cent. of these cases, works against this neglect, since the required interference with the uterus is more easily carried out by the vaginal than by the ventral route. Following this postulate, I antefixate even an anteflexed uterus, and excise diseased tubes from the horns of the uterus by both

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vaginal and ventral celiotomy. I operated in this manner on some cases in New York. Some months after the operation a cauterizing treatment of the cavity of the uterus has to be carried out, since occasionally the curetting and cauterizing that were undertaken apart from the chief operation may not be sufficient to thoroughly allay the chronic endometritis. At the end of this after-treatment the discharge, as well as the pains in the sides, entirely disappear.

In order to relieve immediate pain, thorough extirpation of diseased tubes is necessary. A diseased tube should only be left behind when, after the removal of all adhesions, its ostium appears open, and when a great desire for conception has been expressed. Under these circumstances, however, it may be found that either no conception has taken place, or a tubal pregnancy occurs, or the continuance of the disorders compels one to make a supplemental operation for the removal of the second tube. I have never seen pregnancies after salpingostomy.

A chronically inflamed ovary may sometimes be left behind, if the tubes have been removed, without the fear that it will cause any substantial discomfort. It is always well, however, to resect any visible follicles or to destroy them by ignipuncture. The author has seen pregnancy take place after the extirpation of the adnexa on one side, and the above-mentioned treatment of the ovary on the other. By means of this conservative mode of procedure the woman retains her menstrual function and sexual character, which for psychological reasons are of great importance to the patient.

Attention should be paid to the fact that pain coming from other organs, such as an inflamed appendix, or an adhesion of the omentum to the abdominal scar, is often interpreted as arising from adnexa left after a conservative operation. This pain requires the removal of the inflamed appendix in the first instance, vaginal instead of ventral celiotomy, as after vaginal celiotomy adhesions between the peritoneal wound and the omentum are not possible.

By attending to these precautions and by using catgut always, the results of conservative operations on the appendages, in which the uterus and at least the remains of one ovary are left behind, are very favorable. The author can say, after a careful

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observation of over a thousand such operations, that any supplemental operation is only necessary in 2 per cent. of the cases.

In women, therefore, under forty to forty-five years of age, extirpation of both appendages and the uterus is only indicated when both ovaries present collections of pus, or when both ovaries have undergone total cystic degeneration.

In young women under forty or forty-five years of age, if one is compelled to remove an inflamed or myomatous uterus, it is well to remove both tubes, but to leave at least one ovary behind if it is normal to some extent.

DR. FERNAND HENROTIN.—With reference to conservative operations upon the ovaries and tubes, I read a paper before this Society when it met in Chicago with practically the same title, and although we are going to keep on doing these operations, because it is improper to do radical operations in many of these patients, I believe there is reason to think that a very much larger proportion of women remain cured than is known to the operators themselves. Personally, I would like to say, so far as I can judge, at least 30 per cent. of the patients I have operated on conservatively, particularly their ovaries and tubes, not including the septic and inflammatory cases, remain partially uncured, and a good many are fully as bad as they were before operation.

One thing in particular to which I desire to direct attention, because we are here to give our individual views, is the matter of conservative operations upon the pelvic organs of women through the vagina. With all due regard for and proper courtesy to Professor Dührssen, who comes to us with a wide experience, I wish to emphasize the propriety of very carefully selecting cases for conservative work through the vagina. There is no one set of cases that needs more particularizing, more special watching and careful selection, for conservative work than those of young women, because they are the ones whose tubes and ovaries must, if possible, be conserved. They are bad subjects for vaginal work. Any operation that involves the cutting of the introitus vaginæ, the splitting up of the perineum, is certainly not the proper procedure for doing conservative work on young women. If you have to split the vulva to get room to work on the adnexa, I think you can infinitely better do the work through

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the abdomen. It is impossible to do as fine work and as complete work through the vagina as you can through a clean abdominal incision, one that can be made short and can be brought together beautifully at the close of the operation, and in which the scar will disappear in a short time, and in which there is practically no reason to fear a hernia, particularly where a short incision has been made. Where a young woman has a narrow vagina, I would not think or expect to split it down in order to get room for operating. A large number of these women come to us who have never borne children. They have narrow vaginas, and a good many of them need to have their vaginas dilated, and if we want to do complete work, whether through a posterior vaginal or anterior vaginal incision, it will become necessary to use retractors, stretch the vulva, and the force that is used in stetching the vagina often does damage to the young woman. Therefore, while I have taken away large ovarian tumors and things of that kind through the vagina, the cases have been carefully selected. I believe that conservative operations through the vagina are two or three times as fatal as conservative work on the mild cases through the abdomen, and I have known of several deaths that it seemed to me ought never to have occurred.

Dr. J. Riddle Goffe.—It seems to me the only paper we have had on this subject that really gives us data for discussion is that of Dr. Manton, to which we have listened. He has presented us with an array of facts and figures that are definite. There is no glittering generality in which he indulges. He does not sweep the earth, but he has given us the careful results of very considerate observation of a series of one hundred cases, and it seems to me that his paper is extremely convincing.

Those men who insist upon a radical operation under all circumstances seem to claim that their patients are all cured, and therefore they say we have 100 per cent. of cures. That is a false position to take. According to Dr. Manton's paper, they have only 60 per cent. of cures. We know that 100 per cent. of patients are not cured by any operation, and that those men who do radical work all the time have a great many failures. There are lots of cases they do not cure, and when a patient comes to you for the purpose of undergoing an operation and you say you are going to cure her by taking out her appen-

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dages, you are working on a false basis, because a large percentage of these patients are not cured by radical operation. Those of us who are doing conservative work know that there are a certain number of cases that are not cured by conservative operations. The question is whether the number of cases cured by conservative procedures is greater than that cured by radical methods, and vice versa.

Of course, I do not believe it has been absolutely proved as yet that the ovary secretes a certain substance that is absolutely necessary to a woman's health; but, it seems to me, that data are rapidly accumulating which point strongly in that direction, and that is one of the reasons—hypothetical reasons—why I believe in conservative work, and in saving the fraction of an ovary in these cases where we can do so, being reasonably sure that the fraction that is left is healthy. I believe in these conservative operations. I think we are all agreed by this time that it is a wise thing to do, and that in cases of hysterectomy for fibroid tumor it is prudent to leave at least one ovary, if possible. I think we are all agreed upon that. That is conservative work. I believe it is wise to leave even a small fraction of one ovary in every case where we can convince ourselves that that fraction is healthy and has sufficient dimension to give what we consider ovarian secretion, and perhaps to cast off a certain number of ova.

Just a word or two in answer to the remarks made by Dr. Henrotin. I have found in my experience that the vagina can be incised in the most delicate and successful way so as to enable us to do as fine conservative work on the ovaries and tubes as can be done through an abdominal incision. Dr. Henrotin says that he wants these organs bathed in sunshine. I wish to say, that in operating by the vagina I bring out the ovaries and tubes so that they are bathed in the sunshine. They can be brought down to the vulva, and we can do just as good and satisfactory conservative work by the vaginal as by the abdominal route.

Dr. Philander A. Harris.—I wish to say a few words regarding conservative work upon the appendages in my own practice, and first in relation to pus tubes. 95 per cent. of all women upon whom I have operated for the removal of pus

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tubes in the past six years continued to menstruate afterward. They also were cured of their pelvic pains, excepting in instances where dysmenorrhea had characterized the life of the individual prior to the development of salpingitis. Removal of pus tubes and leaving the ovaries will not cure a dysmenorrhea which the patient had from the very beginning of her menstrual life, except such dysmenorrhea as was due to salpingitis acquired before the development of menstruation. As a rule, dysmenorrhea beginning with menstrual life is not curable, excepting by removal of the ovaries, or possibly by the occurrence of a pregnancy. I am not accustomed to remove the ovaries for the cure of dysmenorrhea which began with the menstrual life of the individual. I have demonstrated to my entire satisfaction that when diseased tubes are exsected from a patient who has always had dysmenorrhea, that the removal of her diseased tubes did not cure her of the primary dysmenorrhea but it cured her of those pains which were added to her primary dysmenorrhea by the acquirement of salpingitis. In taking histories I have for many years been particularly careful to find whether patients had suffered from dysmenorrhea before the development of uterine and tubal trouble. By so doing, I could tell one class of patients that removal of their tubes would probably cure them of their pelvic pains, while I could tell another class that removal of their tubes would only cure them of such pains in their pelves as were produced by the disease of their tubes. As to the exsection of one diseased tube and the leaving of a tube or part of a tube on the other side which appears healthy, several years ago I performed a number of unilateral tubal exsections of this sort. Some of them were disastrous failures, so that I had to re-operate a number of times, only to find that the tube which had been left in had become grossly diseased and had to be removed to effect a cure. In two instances the uterus was so softened and diseased that I removed it also with the remaining tube. Thus I have not accomplished much by unilateral salpingectomy and my experience causes me to raise a voice of warning against the removal of a diseased tube and the leaving in of a much smaller tube, wherein only the slightest pathological changes may yet have occurred. I feel that I have accomplished but little in the field of what might be called

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conservative work upon diseased tubes. I cannot tell when the ovaries are diseased unless the changes are so gross and apparent as to be unmistakable.

If an ovary is abscessed, as often happens when adherent to a diseased tube, I sometimes remove it, or if the other ovary is abscessed, I take out the biggest abscessed ovary and split the smaller abscessed ovary in two, evacuate its contents, cauterize the pyogenic membrane thoroughly with 95 per cent. carbolic acid, neutralizing the acid with alcohol. I then sew the two flaps of the ovary together, flush the abdominal cavity with a 1:1000 formalin solution, flush again with normal salt solution and close the cavity. Many times where both ovaries have been abscessed, I have thus preserved the best-looking one. Have exsected both diseased tubes, have cured the patient of every pelvic pain and have maintained menstruation with entire regularity and painlessly, excepting in the instances where dysmenorrhea was present prior to the development of salpingitis.

Dr. Reuben Peterson.—I feel like apologizing in a way for taking part in this discussion, because I have not collected my own statistics, and I feel, after listening to Dr. Manton's paper, in which he has done a great deal toward solving the problem, that really we have not much right to speak in an indefinite way. Still this is a very interesting subject and one upon which we should express an opinion even if we are unable to back up such opinion by our statistics.

First of all, I would like to say a word or two concerning the statement made by Dr. Goffe, that we are all agreed that in the removal of fibroid tumors it is well to leave in one or both ovaries. I have given both methods a fair trial. I have taken out more ovaries than I have left in after the removal of fibroids; but from a careful study of my cases I cannot say that the women are any better, either symptomatically or in any other way, where I left in one ovary or both ovaries after hysterectomy than where I have removed these organs, and I have tried to follow my cases carefully.

I can only speak in admiration of what Dr. Manton has done. He has gone about this matter in the right way. But I would like to ask him how he got the reports from these women? Did he examine them himself, or did he get the reports from the

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doctors, or from the patients themselves? If he got the reports from the women themselves, then he gets far different reports from what I do. If I send out a letter to twenty or twenty-five or fifty women upon whom I have operated, I get astonishing reports from them, and if anybody can say they are well from these reports, then their experience is different from mine. They often state they suffer far more than they did before I operated on them, yet I know from their physicians that they are in every way improved. So I would like to have Dr. Manton enlighten us in this regard.

In regard to ovaries that are punctured, some four or five years ago I began to have careful microscopic examinations made of parts of ovaries that I thought were diseased, certain ovaries that I thought needed puncture, and the pathologist reported in a number of cases that I was taking out normal bits of ovary. Once in a while, as I continued the work, I would get an ovary that was two or three times the size of the normal ovary, and I would say, here is something that is pathologic; I would cut into the cyst, cut it out thoroughly, and sew up the cut with catgut. I would then send a specimen to the laboratory, with the result that again my hopes would be doomed. The report would be that I had taken out a normal corpus luteum or an enlarged corpus luteum. So, it seems to me that this whole question is in a confused state. It goes without saying that we do not remove organs or parts of organs except when we are obliged to, but I have learned from my personal experience that if I am dealing with a pyosalpinx on one side, and there is anything the matter with the other tube, I take that out also. I do not think any splitting of the tube and sewing it back or forward, or in any other way, will enable me to cure that woman. Radical surgery is here conservative surgery, for it brings about a cure and at one operation.

Dr. I. S. Stone.—It would seem that this discussion has taken the form of personal experience in doing conservative work on the ovaries and tubes. I have elsewhere, in a report, tabulated seventy-five cases operated on in a conservative manner. My conservative work has been along this line; trying to save for a woman who wants to bear children, one tube and an ovary; in pus cases, if necessary, washing out the tube and

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leaving it. Recently I have reported such a case in the *American Journal of Obstetrics and Diseases of Women*, and I consider it the most successful surgery of that kind I have ever done.

With reference to dysmenorrhea, a great many women are sent to us who have the symptoms, and in whom the family physician has discovered a cystic ovary. Dr. Baldy deserves a great deal of credit for alluding to that particular part of the subject and he properly claims that the influence of the mind has some effect on the disease. Speaking of my own experience, I have no reason to believe that I have cured any case by removing a small cyst of the ovary, either by ignipuncture or by excision.

Certain cases of conservative operations have been mentioned by Dr. Peterson, where he spoke of leaving one ovary or both, and had to operate a second time. I do not think that should deter us from leaving a healthy ovary in a young woman of thirty years of age or less. There is no reason why we should take out every ovary because we remove the uterus. I intend to continue doing conservative work wherever in my judgment it is wise to do so, and if I must operate a second time to remove an ovary, I shall keep on just the same. Therefore, the question narrows itself down to the possibility of relieving patients by vaginal section and without leaving a mark upon the patient's abdomen, especially in obese patients. Just there I think it is a conservative measure to perform the vaginal operation.

Dr. William H. Baker.—I believe in conservative work on the ovaries. I would like to mention one case which I have already reported. A patient came to me some years ago who had suffered for a long time. Her physician informed her that she must have her ovaries removed. I said, very well, if necessary, I will operate. Her husband came to me and said he wished to have his wife undergo an operation; that she had suffered so much that according to the family physician both ovaries should be removed. On examination I found the condition to be one of ovarian cystoma on one side and a diseased tube and removed both. On the other side there was a tumor of the ovary about the size of a hen's egg. I found I could remove that and leave a portion of the ovary, which I did, much against the opinion of her physician, who was present,

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and who begged me not to leave it. However, I removed the tumor, leaving about two-thirds of one ovary. The husband, the wife, and the physician in charge were very much disappointed. I felt, however, that I had done my duty. Within a year from that time the husband came to me and said that his wife was now so well that he wanted to know whether it would be safe for her to have another child. I replied, "I see no reason why your wife should not have more children."

In a year and a half I received a letter from the husband that they were the happiest couple on earth. "My wife has given birth to twin boys, ten pounds each."

DR. HENRY P. NEWMAN.—I was led some years ago to change my convictions as to the advisability of removing both tubes in every case of gonorrheal infection of one side. I had a case of such limited infection and my operation consisted in curetting the uterus and sterilizing the endometrium very carefully with carbolic acid and iodine, as is my custom, then making a V-shaped incision in the right cornu, entirely removing the interstitial portion of the right tube. The patient made a prompt recovery, overcame the morphine habit contracted during her illness, married and gave birth to a healthy child. This operation was done at a time when the concensus of opinion was that in every case of gonorrheal involvement of one tube we should remove the other. We must weigh matters very carefully and take many things, personal, social, and ethical, as well as pathologic, into consideration before deciding issues of this character and I do not think any arbitrary rule in the premises tenable.

DR. SETH C. GORDON.—I shall not occupy very much of the time of the Society in closing my part of the discussion. My paper was not prepared for this symposium originally; it was prepared and read before a private clinical society in Portland, and took up in its scope a little broader view than the symposium contemplated. I believe that in a great many of the cases where so-called conservative operations have been done on the ovaries and tubes the operations were unnecessary. It has been stated that the ovaries and tubes may look a little cystic, etc., and do not need to be operated upon. I made the point in my paper that where it becomes necessary to remove both ovaries and tubes, the uterus should be taken with them. That is what

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I believe to be conservative work. It is conservative in that it conserves the health of the patient more than it would if we left this useless uterine bag.

Another point which I did not have time to read in my paper was that the operation made by Hegar for the purpose of stopping the growth of uterine fibroids was not conservative; in the very bad cases requiring such operations for uterine fibroids hysterectomy should have been done. Such operations conserve the health of the patients, and that is the reason they come to us for our opinions. Where we remove both ovaries and tubes we should remove the uterus also. I believe a great deal of the so-called conservative work has been useless, needless, and harmful.

There is a class of ovaries of which I have seen many in my professional life, such as were described by a Fellow of this Society, Dr. Palmer, of Cincinnati, in a paper in which he spoke of intermenstrual pain, and in treating that class of patients he has removed the ovaries, and the women have been completely relieved. The ovaries showed signs of having been subjected to an inflammatory process, a condition which I think is very rare, and in cutting such ovaries the external part has been found to be very hard. I have seen these cases so bad that after an ovary was incised, with the edge of it you could cut your finger, as it was almost as sharp as a razor. There is a class of cases where the tubes should be removed, and when you remove them, my advice is not to leave the uterus into which the uterine arteries are both pumping, as a state of chronic passive congestion will ensue, and keep the patient in as uncomfortable condition as she was before the operation.

With reference to the treatment of uterine fibroids, in young or unmarried women, during the childbearing period, I believe we can to a certain extent, and with a good deal of relief to them, perform myomectomy. But, as a rule, in all cases except that class, when a woman comes to me, as I said twelve years ago, for troubles due to uterine fibroids, I believe it is better for that woman to have a hysterectomy performed.

DR. MANTON.—I have very little to add to what I stated in my paper. I think this question can be settled only to individual satisfaction and by one's own experience.

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I cannot agree with those gentlemen who claim that cystic conditions of the ovary do not, in some instances, call for operative procedures. My experience has been that in a large number of cases they produce much suffering, and by removing the tension of the cyst, and destroying the cyst wall, the patient is relieved from suffering. I have seen relief afforded such patients time and again, and I am satisfied it is the proper thing to do. But, of course, if one has not had such experience, the proper thing for him to do is to take out the ovary or ovaries, as the case may be.

Dr. Peterson asked how I know these cases I have reported. I know because I have had a number of women under my personal observation for several years, some of them many years. Those that I have not examined and not seen personally, I have heard from through correspondence, or through their physicians or friends; I think the percentage of recoveries, as set forth in my paper, is a true one of the cases that have come into my hands.

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THE TECHNIQUE OF THE REPAIR OF LARGE VESICAL FISTULÆ.

By William S. Stone, M.D.,
New York City.

It is not the purpose of the writer to offer a new method of operating or to bring out any original points of technique, but rather to use the features presented in two cases that have come under his observation and treatment for illustrating such technical principles as seem especially adapted to the repair of large fistulæ. This plan seems to be desirable because such injuries are rare, and the surgeon who is confronted with their repair for the first time may hesitate as to what procedure to adopt, as the recent literature consists largely of the reports of individual cases, for the purpose, apparently, in most instances, of describing what the author considers a new operation, but which a careful review of the older literature shows is only a minor modification in some detail which the peculiarities of his case may have required.

The first case that the writer wishes to report was a primipara, twenty-four years of age, who had been delivered by podalic version, decapitation, and perforation of the after-coming head, six weeks prior to the operation. The pelvic measurements showed a slight degree of general contraction. A complete laceration of the perineum was so surrounded by cicatrices that the vaginal entrance was markedly contracted, making it exceedingly difficult to inspect its upper part. The cicatricial tissue extended into the vagina

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in different directions. The urethra was laid open its entire length, except for a small collar at the meatus. Continuous with this opening in the urethra was one which included practically the entire septum between the vagina and bladder. It was so large that the bladder wall prolapsed through the opening, the mucosa of which was uniformly and intensely congested. Its margin was everted and adherent to the vaginal wall, especially at the upper border, where it overlapped the anterior surface of the cervix. With the patient in Sims' position, incisions were first made in the posterior sulci of the lower part of the vagina in order to expose effectively the field of operation. The cervix was then grasped with the volsellum and pulled down as far as possible. The everted and adherent bladder mucosa was dissected away from the cervix, and by making a transverse incision anterior to the cervix, as in the performance of hysterectomy, the upper part of the bladder was freed as far as the peritoneal juncture. By means of blunt dissection at the sides, the entire upper portion of the bladder was thus freed, and by gradually working downward the lower part was also separated from the edges of the fistula, care being taken not to injure the ureters, the openings of which could be readily seen. The upper and more movable part of the bladder-wall was then brought down and sutured with interrupted chromic gut sutures to the lower and more fixed portion, the line of suture running mostly in a transverse direction and effectually closing the bladder. The vaginal edges, although more movable than before the dissection, could not be brought into apposition without tension; but by bringing down the uterus, which had been made movable by the dissection, and suturing the vaginal edges to the sides and end of the cervix, the opening was closed without tension. The urethral mucosa was so thin and friable that no attempt was made to free it at the torn edge, but by an incision on either side through the vaginal wall, run-

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ning parallel to and about half a centimeter from its edge a flap was made which with the aid of the more movable flap around the bladder covered in the urethra fairly well. Interrupted sutures of black silk were used for the vaginal wall. A soft rubber catheter was kept permanently in the bladder for three days and bladder irrigated once a day with boric-acid solution. The entire portion over the bladder healed by primary union, but a greater part of the urethra failed to unite. There was some power of retention, however, because the vesical neck was well covered. A subsequent operation, two weeks later, in which the dissection of the vaginal wall was more extensive, effectually closed in the urethra. One month later the perineum was repaired, when the function of the bladder was normal, except for a slight frequency.

The second case was a multipara, thirty years of age, who first came under observation a few weeks after a difficult labor, suffering from a marked cystitis. Improvement quickly followed boric-acid irrigations. The cicatrices in the vagina were not so extensive as in the first case, and the urethra was not involved. The opening in the bladder was nearly as large, but its upper limits were not so close to the cervix. The same method of procedure was adopted as in the first case, except, owing to the greater mobility of the vaginal wall, the uterus was not used to the same extent in closing the vaginal opening. Union was complete, except for a very small opening where three corners had been rather imperfectly apposed. This was easily closed two weeks later.

It is unnecessary to give a complete review of the literature before this society, but a proper appreciation of the present technique requires a brief consideration of the steps from which the present principles of operating have been evolved. It does not detract any from the pioneer work of Sims, Simon, and Emmet that the details which they considered

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so essential to success are now known to be unnecessary. Numerous successful cases, for example, are on record, in which all of the three points so forcibly claimed by Sims in 1852 as original and essential have been disregarded.

(1) Even the Sims position for the better exposure of the field of operation has not been found essential by many operators, although the writer found it to be the best position in his own two cases. (2) The use of silver wire, undoubtedly the best material for the methods formerly employed, is now abandoned by the majority of operators, the writer using silk in one case and silkworm gut in the other, with equally good result. (3) Sims' special form of self-retaining catheter is now little used, and it may fairly be doubted whether any form of permanent catheter is necessary, as both McCann and E. Rothe have been successful without its use.

That the present methods of operating are not based upon principles which lawlessly disregard these older ideas is appreciated by carefully watching the evolution of the operation. The incision of the vaginal sulci, for example, as first suggested by Schuchardt, makes the time-consuming preparations of Emmet unnecessary.

The use of vaginal flaps in various ways from either the anterior or posterior wall, as proposed in 1890 and 1891 by Martin, Trendelenburg, Sänger, Fritsch, and others, marked the first step in advance over the classical operation. Although then considered the essential factor in success, this method is now regarded simply as an adjuvant to the principle of separating the bladder from the vaginal wall, first proposed by A. Mackenrodt in 1894. This is best done by beginning at the upper part in front of the cervix, making an anterior colpotomy incision, and thoroughly freeing it as high as the peritoneal juncture. In doing this, use may be made of any one of several details. The greatest credit should be given to Dr. Kelly for clearly presenting this principle to the American student. Without his descrip-

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tions of his own work and that of others, the writer feels he would have been unable to repair the cases just reported. The importance of this method as a principle rather than as a detail may be best appreciated by the fact that Dr. Kelly has shown that the upper and movable portion of the bladder may be simply sutured to the lower vaginal edge without closing the vaginal wall. Maze, H. Thompson, and Rothe have also demonstrated that if this principle is well carried out, the suture of the bladder-wall may be unnecessary. The same principle was partially applied by Dudley in his well-known case in which an area of the upper bladder-wall was denuded and sutured to the lower edge, thus reducing the size of the bladder and using the lower portion to fill in the gap.

The second important principle, also first suggested by Mackenrodt, of using the uterus, made movable by the dissection of the bladder, as an aid in closing the vaginal opening in some of the cases is of the greatest value. Mackenrodt's own method of fixing the uterus in anteflexion, as in a vaginal fixation, is better replaced by that adopted by Küstner, Wolkowitch, and imitated by the writer, of simply using the cervix by drawing the uterus down in a position of moderate retroversion. Freund's method of using the retroflexed organ drawn through an incision in the posterior fornix, and the more recent modification by Newman, of using the entire uterus pulled down in a similar manner and leaving only its sacral attachments, will not probably be generally adopted. Döderlein's suggestion of removing the entire organ also seems an unnecessary procedure.

Since the adoption of these two principles, Ternowski has cured 90 per cent. of his cases; Pauchet has been successful in 12 out of 13; Döderlein, in 12 out of 19.

All of the recent contributions to this subject are essentially the description of some minor modification in the details, which have little to do with the success of the opera-

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tion in general. The suggestions of having the suture lines of the bladder and vaginal walls in different directions, or in not having them directly over each other, seem unnecessary when applied to the repair of the larger fistulæ, because it is only by the merest chance that they could be brought into the same line. Inversion of the bladder mucosa into the bladder and of the vaginal mucosa into the vagina, as recently proposed by Reeve, seems also an unimportant detail. Hausmann's idea of separately suturing the prevesical connective tissue will probably add little to the value of the operation.

The restoration of an extensively injured urethra, especially in conjunction with a similar injury to the bladder, still presents a difficult problem, chiefly for the reason, appreciated by the writer, that the injured urethra is too thin and narrow to be freely dissected from the vaginal wall. It is probable that the method suggested by F. Berndt, which was used by the writer, is the one capable of the widest application. The vaginal flaps can be supplemented by drawing down the mucosa surrounding the bladder opening so that, even if the urethral operation is not entirely successful, some power of retention is acquired. Numerous and ingenious methods have been tried. Wolkowitch, for example, bored a hole through scar tissue and pulled some of the vesical mucosa through the opening. Newman made a hole through the fundus of the retroflexed uterus, and created a fistulous tract into the cervix which projected into the bladder. The most extensive application of the flap-splitting method has recently been made by Sellheim, who successfully used a flap that extended from the labia to the upper part of the posterior vaginal wall, which was of sufficient thickness to include the ischicavernosus, the transversus perinei, and a part of the levator ani muscle.

Conclusions. 1. The basic principle in the repair of the large fistulæ is an extensive separation of the bladder-

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wall, especially of the upper part in front of the cervix, by means of which it is readily sutured to the more fixed lower portion.

2. The uterus, which has been made movable by the free dissection entailed in the separation of the bladder, or by an additional incision posteriorly in some cases, is a most valuable supplement in filling up the opening in the vaginal wall.

3. With these principles applied, it is a matter of little importance what kind of suture material is used, or what relation the vesical and vaginal suture lines have to each other.

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THE TREATMENT OF VESICOVAGINAL FISTULÆ

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Experience has shown that wounds of the bladder made during the performance of surgical operations heal readily after fairly careful application of sutures. This occurs after injuries at the base, as in vaginal hysterectomy, as well as in those at or near the fundus, which are comparatively frequent in operations upon the uterus for the removal of tumors. Two principal causes contribute to this result. One is the healthy condition of the bladder itself, and another is the ease with which the muscular wall of the organ can be approximated when absolutely free from the uterus or vaginal wall. It has been our experience that the very large fistulæ afford such free drainage as to secure perfectly healthy mucous surfaces of both bladder and vagina, the only exception being in one bedridden patient who had been indifferently cared for and whose fistula was covered with incrustations. It will be found in many instances that the large fistulæ have persisted because they are associated with injuries of the vagina of a serious character which produce extensive cicatricial contraction. Such an injury is more than a mere incision or laceration of the vaginal wall and includes the connective tissue also, which becomes a permanent retractor to the margins of the fistula, and must prevent its closure until surgical relief is afforded. We have found it unnecessary to treat these cases by the tedious method of Dr. Bozeman and now feel confident that any fistula can be closed

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satisfactorily by first liberating the bladder from any adherent surface or organ which prevents its closure and then by uniting the margins of the fistula with catgut, and afterwards, at the same sitting, by utilizing the vaginal wall or uterus as may be needed to support the line of sutures in the bladder wall. This is opposed to the contention of those who favor suture of the supporting base only; the vaginal wall for illustration. Finally we may draw the vaginal walls forward after suitable dissection, or we may utilize the uterus as suggested by Dr. Kelly, which is done by drawing forward the cervix and making it secure with sutures to the anterior margins of the fistula, or by using the Freund method of turning the fundus downward and then forward into the opening. This last method seems to us quite objectionable, as it necessitates a new opening into the cavity of the uterus to provide for the escape of the menstrual flow. We have overcome the disadvantages of this method of Kelly and have obtained abundant mobility by drawing down the uterus, cutting away the anterior vaginal wall and dividing the broad ligaments so as to cause less traction upon sutures. This has also been accomplished by separating the bladder from the uterus and broad ligaments through an abdominal incision, and by a division of the broad ligaments at their upper border, where they are attached to the uterus.

This method has been used for the relief of fistulæ of any description, and we owe Mackenrodt (1894) our acknowledgment for priority and for clearly establishing its usefulness in almost any fistula of whatever shape, position, or size. In the treatment of small fistulæ the vagina is divided longitudinally, the bladder separated from the vaginal wall, then united and the vaginal wall closed; each independently. We have found its best and most useful application in the closure of large fistulæ and where failure had resulted after previous attempts at cure.

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CASE I.—Mrs. C., aged thirty years, III-para, was attended by a physician who attempted to turn and deliver a child whose head appeared to be immovably fixed in her pelvis and because no other means of delivery were at hand as the physician was far away from his home and from any professional assistance. His efforts resulted in most serious injury to the vagina, bladder, and uterus. The patient informed me that the physician admitted having had his hand in her bladder. When the patient consulted the writer, several months after confinement, her condition was indeed pitiable. The entire anterior wall of the vagina was separated widely, and the laceration extended into the uterus on its anterior surface as far as the internal os. The interior of the bladder was easily inspected and the mucous surface found healthy. The urethra was torn away and a circular band (the "constrictor urethræ") remained to indicate the location of the meatus. An operation was impossible by any of the methods of vaginal closure. The Bozeman method of stretching the vaginal flaps was not possible, for the vaginal tube was wide open and could not be drawn far below its normal position. The laceration appeared to be nearly in the median line, and fortunately the ureters were uninjured. We first proceeded to separate the anterior vaginal wall and bladder from the uterus. We extended this dissection nearly, as far as possible, entirely across the base of the bladder from side to side, and caused a moderate amount of hemorrhage in so doing. We then tied off the lower uterine arteries with the corresponding portion of broad ligaments, which liberated the uterus sufficiently to enable us to draw the cervix forward to the anterior border of the fistula. The next step was the separation of the bladder from the anterior vaginal wall. When the bladder was liberated from its attachments we found the best approximation was obtained by making a Y-shaped closure. The base of the "Y" was located at the new urethra

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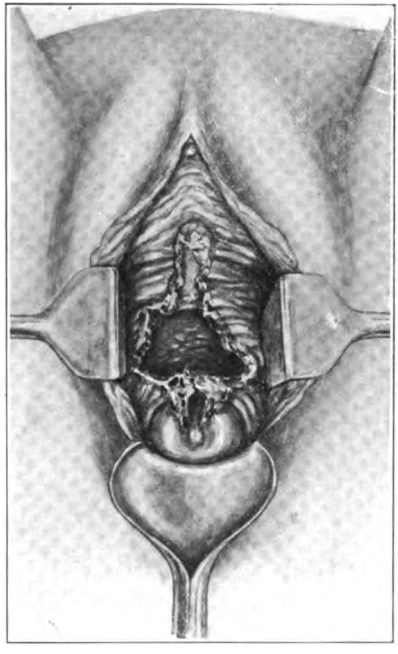

FIG. 1.—Represents a large vesico-utero-vaginal fistula which was relieved by a modification of Mackenrodt's operation. The bladder is freely separated from the anterior wall of the vagina and uterus and closed independently of that organ. The uterus is then brought down and attached to the anterior margins of the rent, and the lower third of the broad ligaments are divided to avoid traction.

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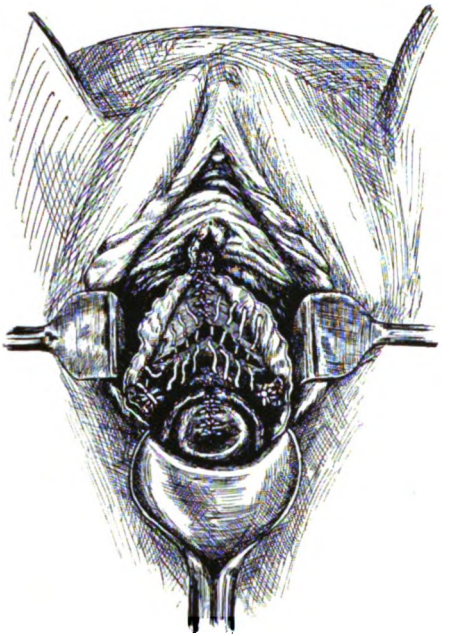

FIG. 2.—The bladder is here shown after its separation from the uterus and vaginal wall. The injury to the uterus has been repaired and the sutures placed in the bladder ready for tying.

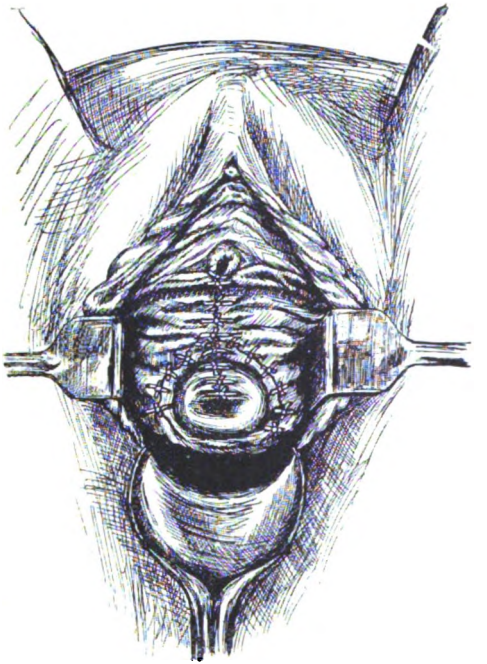

FIG. 3.—The appearance of the wound after completion of the operation. The line of sutures between the cervix and urethra should be rather shorter than is represented, *i. e.*, the cervix should be nearer the meatus.

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and its centre at the site of the former position of the cervix. This left the upper line of sutures in the bladder in a more or less transverse direction, and we found it possible to make a complete and accurate closure of the large rent. After closing the laceration in the uterus we sutured the centre of the "Y" to the denuded cervix, and afterwards adjusted the vaginal flaps and sutured the uterus in the space left, with the result that we had perfect closure of the entire wound after the first operation. But we were not yet able to pronounce our patient cured, for several additional operations were required before the new urethra was completed so that she could retain her urine from three to four hours.

The health of the patient at the present time is good and would be perfect but for the danger of leakage after the bladder is filled with urine. The loss of her urethra has been the difficulty which has been almost insurmountable, yet we think her condition far better than after any of the operations for using the labia in building up a new urethra. We have always succeeded best by using such flaps as were obtainable in the vicinity of the old or former site of the urethra.

Case II.—A second case came under our care in October, 1900, which illustrates the value of dropping down or lowering the fundus uteri in order to fill a gap due to necrosis and instrumental injury. The patient, a lady of delicate build, had a protracted labor which resulted fatally for her child and in a deep laceration of the whole length of her vagina on the left side. The uterus was fixed and somewhat retroverted. The tubes and ovaries were hopelessly diseased and a large transverse fistula existed, which involved the whole anterior portion of the vagina and which could not be closed by any of the ordinary methods, because the vagina contained a mass of cicatricial tissue on the left side which positively prevented anything like approximation of the edges of the opening. She had already submitted to one

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operation for closure which was entirely unsuccessful. We were obliged to open the abdomen in this case, and after removing the adnexa we tied off a liberal portion of the broad ligaments on each side and found it possible to draw down the uterus as far as wanted. Then we liberated the bladder from the uterus, fearing that we had not sufficient free bladder margin to permit closure of the fistula. The operation was then completed by placing the patient in the lithotomy position and proceeding much as in our former case. The uterus was easily made to fill in and support the repaired bladder and the operation has given perfect results.

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THE SUPRAPUBIC ROUTE IN OPERATING FOR VESICAL FISTULÆ.

By Howard A. Kelly, M.D.,
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It is just about half a century since Jobert, Sims, Emmet, and Simon fought their great battles with vesicovaginal fistula and came off triumphant. This surgical victory created such an impression upon contemporary thought, that it seemed at first to the professional world as though a complete mastery over this difficult question had at last been secured. The succeeding decades, however, brought to light numerous unfortunate cases in which the fistula was either so large, or so fixed in scar tissue, or so extensively attached to the pubic ramus, that the operations of denudation and approximation by suture were insufficient to cope with the disease. It was for these cases that the operation of colpocleisis, or the complete closure of the vagina, throwing it into a common cloaca with the bladder, was used. Rose's procedure was next devised in order to obviate the risks of the stagnation of the urine in the vaginal pocket formed by a colpocleisis. He effected this by means of a rectovaginal fistula, through which the urine drained at once into the rectal ampulla, whence it was discharged at intervals of some hours, after tolerance became established. It is but just to the memory of that greatest of all plastic surgeons, T. A. Emmet of New York, to call attention to the fact that this distinguished operator was undoubtedly

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able, sometimes at one, sometimes after many sittings, to close fistulæ for which other surgeons were constantly obliged to resort to colpocleisis.

The skill and patience of Emmet in pushing the Sims operation to its extreme limits, far even beyond the point to which it was carried by its originator, have never been equalled.

With a view to avoiding these mutilating operations just referred to, numerous other ingenious methods have been devised, some of them so remarkable that they would undoubtedly astound the pioneer plastic surgeons could they step into a modern clinic and see them applied today.

A careful investigation of the surgical literature of vesico-vaginal fistula for the past sixteen years, gathered for the most part from Frommel's *Jahresberichte*, vols. i to xvi, *passim*, shows that almost every possible conceivable avenue has been employed by which a fistula could be approached and dealt with to better advantage. In every instance the new device has been proposed and adopted in order to circumvent difficulties which appeared to the operator as insurmountable by the usual vaginal route; in hardly any case has the mere fact of novelty, often so attractive to the surgeon, seemed to have determined the operator in taking the new and original avenue of approach. In reality the evolution of the new methods has been a campaign, and a very successful campaign, conducted against colpocleisis.

Fistulæ have been attacked, for example, by the following nine different avenues:

1. Parasacral Route (Kraske's). I do not recall any case treated by this avenue, but include it in my list, as the incision of the posterior vaginal wall through a parasacral incision offers unusual advantages in denuding and suturing a fistula situated high up.

2. Ischiorectal (Michaux). At the sixth French Surgical Congress, Michaux proposed a new method of approach

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to fistulæ inaccessible by the vagina which had hitherto been treated by vaginal occlusion. Making an incision through the ischiorectal fossa in order to reach the fistula, the only vessels injured are the inferior hemorrhoidals and some branches of the pubic, and the former can be drawn aside without injury, as a rule, in this way avoiding injury to the hemorrhoidal nerve. The patient is placed in Sims' position, an incision 10 cm. in length made, an inch from the furrow between the buttocks, commencing posteriorly about the level of the anus and finishing anteriorly at the point at which the labium majus crosses the ischiopubic arch. This incision opens up the fatty deposits in the ischiorectal fossa and is continued down to the depth of the fossa by a blunt dissection. In this way the vagina is bared, after which the posterior wall is elevated from within and incised to the extent of 6 to 8 cm., exactly in the median line of the lateral wall. In this way a large vaginal window is opened, which can be made larger or smaller according to necessity. In an extreme case the incision may be carried all the way to the vulva, exposing the entire posterior surface of the bladder. Such an incision affords a surprising view of the cervix uteri and the juxta cervical region, together with the whole upper part of the vesicovaginal wall, but more especially of the side opposite to that on which the incision has been made.

The cervix is then seized and pulled down out of the vagina, after which the fistula is denuded and sutured as in an ordinary operation. The opening of the vaginal wall is then closed, and the ischiorectal fossa and peritoneum are also closed with a drain. Michaux's case is reported in a *Thesis*, by Charles C. Martin, Paris, 1897, p. 125. The result of the operation was not entirely successful.

3. TRANSPERINEAL (SANGER).

4. PARAVAGINAL (SCHUCHARDT'S INCISION). Schuchardt (*Arch. f. klin. Chir.*, 1896, vol. liii, part 3), in an article entitled "Weitere Erfahrungen über die paravaginale Operationen,"

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cites a case in which there was a double fistula, fixed in scar tissue, with an immovable uterus, in which by means of his paravaginal incision, proposed for total extirpation of the uterus, the fistula was made mobile so that it could be denuded and closed.

5. VAGINAL (JOBERT-SIMS-SIMON). The classical operation.

6. TRANSVULVAR OR EPISIEAL. A form of paravaginal incision.

7. TRANSURETHRAL (KOLISCHER). Kolischer (*Wiener Med. Presse*, 1897, vol. xxxviii, p. 1629) succeeded in closing a small fistula by galvano-cauterization by the urethra, through the cystoscope, two months after delivery.

8. VESTIBULAR (JOBERT DE LAMBALLE). De Lamballe made use of a vestibular incision in cases of large fistulæ in order to free the margin of the fistula after detaching the urethra from the pubic arch. This method he afterward abandoned.

9. TRANSPUBIC, REMOVING A PUBIC RAMUS (SAMTER). Samter (*Deutsche Med. Woch.*, 1896, vol. xxi, p. 44, Beilag) recommends in cases of fistulæ attached to bone, where there is nothing but the periosteum left, that they should be approached by means of a resection of the bone carried into the obturator foramen, in cases in which the detachment of the periosteum alone is not sufficient. The field of operation on the bone is exposed by a transverse incision through the greater and lesser labium. Samter recommends deep perineal and vaginal incisions to expose fistulæ which are hard to get at.

He further reports a case of fistula cured by means of the sectio alta.

10. TRANSSYMPHYSIAL (V. BRAMANN, WICKHOFF). Von Bramann advises the temporary resection of the symphysis, so as to give a wider abdominal wound and avoid the detachment of the rectus muscles.

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11. SUPRAPUBIC AND EXTRAPERITONEAL (TRENDELENBURG).

12. THROUGH THE BLADDER TRANSPERITONEALLY (VON DITLEE, ET AL.).

13. SUPRAPUBIC, TRANSPERITONEALLY, DETACHING BLADDER FROM UTERUS AND VAGINA.

From these it will be seen that the imagination has had full play and that every available route has been called into service.

It is my desire in the present discussion of this subject to deal with the advantages of the suprapubic route.

The suprapubic route has been used when there is an extensive cicatricial condition of the vaginal orifice or of the vaginal walls, or when there are extensive and dense adhesions of the vesicovaginal fistula itself with fixation of all the surrounding tissues; also when, for any reason, it is impossible to expose the fistula in a matter satisfactory for denuding and suturing it effectively.

Prime requisites for successful plastic work upon vesicovaginal fistulæ are manifestly:

1. A good exposure and illumination of the opening, affording easy accessibility for denudation and suture.

2. Sound, well vascularized tissues in which to operate.

3. A broad area of denudation.

4. A snug approximation of the denuded surfaces by means of sutures without undue tension.

5. The avoidance of tension in the sutures during the healing stage by the use of a suitable drain in the bladder.

In cases for which the suprapubic route is to be recommended, several or all of these important conditions are unattainable by the vagina. A group of cases peculiarly adapted for attack by this avenue, are those in which the fistula lies high up and close to the peritoneum, which is liable to extensive injury in doing an awkward operation from below. Another group is naturally those in which the operation from below has been tried and has failed.

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The first operator to use the suprapubic or transvesical route was F. Trendelenburg (Volkmann's *Samm. klin. Vort.*, January, 1890, No. 355). After two unsuccessful attempts made as early as 1881 and 1884, Trendelenburg, still with entire confidence in his method, succeeded in closing a fistula for the first time in the following manner:

On July 2, 1888, the patient was put upon the table with elevated pelvis (Trendelenburg's position) and the abdomen was opened by means of a transverse suprapubic incision, dividing the rectal muscles at their insertion. The bladder was then opened extraperitoneally parallel to its peritoneal reflection, also by a transverse incision, 4 to 5 cm. in length. In this elevated posture the bladder ballooned out with air and the fistula became clearly visible and easily accessible. The denudation was now made transvesically on the vesical surface, in the shape of a funnel; where the fistula lay too close to the ureteral orifice, the latter was protected from injury by the introduction of a sound. The fistulous opening was then closed with six silkworm gut sutures, which were tied in the bladder, thus completely closing the wound. The incision in the vault of the bladder was then closed down to a small opening, through which a T drain was inserted just over the symphysis. After the operation the patient was made to lie constantly upon one side or the other in order to assist the drainage of the bladder. The wounds healed throughout, and she was able to leave the clinic in seven weeks, holding her urine for from two to three hours. Unfortunately she had to return again in September, suffering from calculi which had formed on the silkworm gut sutures tied in the bladder. This difficulty necessitated the introduction of the finger into the bladder through a dilated urethra, when all the sutures except one were loosened and came out with the concretions. Some smaller concretions were also noticed on the anterior wall of the bladder. On account of this misfortune, the author recommends closing the vesical wound

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with catgut sutures, which he has since done with success, as stated in a foot-note. A perusal of the description of this interesting first case, this type of the group, conveys the impression that a deft gynecologist experienced in treating these fistulæ by the vagina might have succeeded in effecting a closure without making a suprapubic opening.

Similar to and inspired by Trendelenburg's case is that of A. F. McGill, entitled "An Operation for Vesicovaginal Fistula through a Suprapubic Opening in the Bladder," (*Lancet*, 1890, vol. ii, pp. 966 and 976). McGill had two cases. The first was one of epithelioma of the urethra extending onto the base of the bladder. He made an incision three inches long, transversely over the symphysis, and exposed the bladder, which was then opened and attached by suture to the skin surface. With an elevated pelvis, the tumor was brought into view by the hand of an assistant, pushing upward through the vagina. It was removed, making an opening large enough to admit two fingers, which was closed with five sutures on the vaginal side. Then, when the vaginal suturing was complete, the patient was again put in the Trendelenburg position and the wound in the vesical mucosa was closed transvesically with a fine catgut suture. The skin and upper bladder wound were now closed down to a suprapubic drainage tube. A week later the posterior part of the wound in the bladder wall was found open and converted into a fistula admitting one finger, which, however, fortunately closed of itself in thirty-seven days. Bearing the lesson of this case in mind, when McGill next operated upon a fistula the size of a finger tip, situated just in front of the cervix, which followed a forceps labor, he made a transverse incision above the symphysis, opening the bladder extraperitoneally and exposing the fistula. He then freshened the mucosa around its periphery and closed the opening with catgut tied in the bladder. The vaginal opening was next closed from the vaginal side in the lithotomy posture. The upper vesical

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incision was closed in three layers, applied to bladder, muscles, and skin, leaving but a small opening for drainage tube. The fistula healed perfectly and in a month the upper drainage wound was also closed. McGill remarks that he would prefer in future operations to make a vertical instead of a horizontal incision in the abdominal wall in order to spare the recti.

Following Trendelenburg's operation is another case belonging to P. Baumm (*Arch. f. Gyn.*, 1891, vol. xxxix, p. 492, "Zur Operation der Blasen-Cervix Fisteln von der Blase aus"). The patient had two fistulæ (as revealed by the abdominal incision), which from below appeared as one about the size of a mark piece. It was impossible to draw down the structures at the vaginal vault so as to bring the fistula sufficiently within reach to do the classical operation with satisfaction; a denudation *in situ* was, therefore, attempted, by which the opening was closed in an unsatisfactory manner. This left behind a smaller fistula which, however, still easily admitted the index finger. In spite of the weak condition of the patient a further operation was then done by opening the bladder suprapubically through the prevesical space. The fistula thus exposed was denuded in the form of a shallow funnel and closed by means of sutures, threaded with two needles and passed into the vagina, where they were tied. The upper bladder wound was then closed down to a drainage tube. In the convalescence the divided rectal muscles pulled completely away from the symphysis, leaving a large, gaping, granulating wound, and on the seventh day the urine began to escape through the vagina again. An examination showed that the line of sutures had held well and that the leakage came through three stitch-hole openings. In addition to this misfortune, the wound above persistently refused to close, even after two additional operations. In the course of time, however, by using nitrate of silver and operating upon one of the fistules, the vaginal opening was at last completely

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closed. The patient unfortunately died not long after in an insane asylum.

Some idea of the extent to which Trendelenburg's operation has come into vogue may be formed by the following cases reported in our medical literature.

R. Strauch ("Mittheilung eines nach der Trendelenburg-ischen Methode, d.h. mit Hilfe der Sectio-suprapubica operierten Falles von Blasen-Gebärmutter-Scheiden Fisteln," *Correspond. Blatt der Allg. Meckl. Aertze Verein*, 1891, p. 137) operated upon vesicouterovaginal fistula, the size of a thaler, with extensive cicatricial contraction of the vaginal vault, by the Trendelenburg method. The operation was not difficult, as the fistula was found easily accessible and was denuded and sutured. The bladder was drained from above with the patient lying in the side position; complete recovery followed.

Mr. C. J. Bond, of Leicester (*Annals of Surg.*, 1894, vol. xx, p. 392), reports a case in which he used a vertical incision between the recti instead of the transverse incision used by McGill. The bladder was held open by three retractors, when an assistant introducing a finger into the vagina brought the fistula and the field of operation well within reach. The thin cicatricial junction of the vesical and vaginal mucosæ was then incised all round, so as to raise two flaps of vesical mucosa, one on either side of the rent, with edges turned toward the bladder. These were united with catgut, while the edges of the vaginal mucous membrane were drawn together below by means of silver wire sutures. Mr. Bond lays great stress in the after-treatment, upon his continuous irrigation of the bladder with a warm boracic acid solution. He effects this by means of india-rubber tubing passed through the urethra and drawn out through the suprapubic wound. Before removing the tube entirely it was pulled down into the bladder so as to allow the suprapubic wound to close. In the case operated

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upon by Mr. Bond there had already been an unsuccessful attempt by a vaginal operation. His suprapubic operation succeeded in closing the fistula down to a small sinus which was closed from below, thus completing the recovery.

Buschbeck (*Geburtsh. und Gyn.*, von G. Leopold, Leipzig, 1895, p. 361) describes two cases of vesicovaginal fistula operated upon through the bladder. In the first, reported also by Rosenthal and Teynac, there was a resection of the bladder wall so as to form a new bladder.

In the second the cicatricial fistulous opening was split and then the lower vaginal flaps were united with catgut, after which the upper vesical flaps were united with the finest silk, and the abdominal wound was closed. The recovery was disturbed by the formation of concretions on the silk ligatures.

Duplay (*Gaz. med. de Paris*, 1895, vol. lxvi, p. 560) had a case of a fistula, situated high up and quite inaccessible, which was closed through the bladder by means of sutures in two tiers, catgut for the vagina and silk for the bladder wall. The opening of the upper wound in the bladder was closed and a drainage catheter used. This was followed by recovery.

Koernig reports a case from Pernice's clinic (Inaug. Dis., Greifswald, 1895) in which, on account of extensive cicatrices and contraction of the vagina, the attempt was made to bring about a cure by an operation from above. An incision was made above the symphysis, including the muscles of the abdominal wall, but taking great care not to open the peritoneum. In attempting to free the bladder as far as the vagina without opening it, the thin wall tore through. The opening thus made was enlarged so as to expose the fistula, which it was now found possible to close by direct suture through the bladder. The margins of the openings were first denuded, after which the walls of the bladder were separated from the vagina for about 1 cm. on all sides, taking special care to spare the left ureter.

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The wound was now closed with silk sutures which were tied in the vagina; a row of catgut sutures was used to unite the vesical mucosa. Five strong silk sutures were put in place so as to bring the recti muscles and the abdominal wound together, but were left without tying, while the wound above was packed. On account of a severe bleeding which followed the vaginal introitus was tightly closed for a time with silk sutures. The upper wound of the bladder was closed with silk sutures not including the mucosa. The result of the operation was complete recovery.

Duplay (*Arch. de toxic. et gynéc.*, 1896, vol. xxiii, p. 390), in an article entitled "Traitément de fistules vésicovaginales par la suture intravésicale (Cystoraphia interne)," cites a case of total extirpation of the uterus through the vagina for disease of the adnexa, followed by a fistula. A direct closure through the vagina was unsuccessful, as the peritoneum was opened. A Peterson balloon was then put in the rectum and the bladder opened above the symphysis by a longitudinal incision. The margins of the fistula were exposed in this way and split so as to separate the vesical and vaginal walls. The two sets of flaps were then closed with silk for the vagina and catgut in two layers for the bladder wounds. The upper vesical wound was carefully closed with the exception of a little drain at the lower angle. A Sims' drainage catheter was inserted in the urethra. The recovery was undisturbed except for the appearance of a transient urinary fistula above the symphysis.

Gerhard (Inaug. Dis., Greifswald, 1896) also cites a case from Pernice's clinic in which there was a fistula, situated in the upper part of the cervix, which was inaccessible from the vagina on account of the fixation of the uterus. Cauterization by the vagina failed to cure it, so a suprapubic section was made, a calculus was removed, and the fistula was freshened and sutured through the bladder. The operation was difficult on account of the free bleeding. A

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drainage catheter was inserted into the bladder and the abdominal wound was drained as well. The patient made a complete recovery.

Koetschau (*Monats. f. Geb. u. Gyn.*, 1896, vol. iv, p. 344) reports a case of vesicovaginal fistula, due to an abscess in the vesicovaginal septum, occurring two years after a supravaginal operation of a myomatous uterus. The fistulous opening was denuded and closed with silkworm-gut and tied into the vagina, but the patient unfortunately died within a few days of an acute nephritis.

Cola (*Thèse de Bordeaux*, 1897) reports a case of Bourcier's where the Trendelenburg operation was unsuccessful and all efforts resulted in failure.

Latouche (*Gaz. des Hôpitaux*, 1897, vol. lxx, p. 968) operated upon a case, inaccessible below, by Trendelenburg's method with success. He opened the abdominal walls and the bladder with a vertical incision, but enlarged the wound by dividing the recti muscles at their attachments.

Von Erlach (*Centralb. f. Gyn.*, 1898, vol. xxii, p. 251) had a case of vesicovaginal fistula following a total extirpation of the uterus for carcinoma of the cervix; some months later a fistula formed, and in attempting to close it by the suprapubic transvesical operation an abscess was found in the tissues opening into the bladder and into the vagina. This operation having failed, the following year the fistula was exposed and operated upon through the vagina, after making two deep vaginal incisions so as to open up the narrow vaginal canal and make it accessible. This operation was completely successful.

Thiers (*Thèse de Lyon*, 1903–4, No. 161) reports a case of Raffin's following the extirpation of a fibroid uterus. The large fistula had been operated upon twice by the vaginal route unsuccessfully. The Trendelenburg operation was then done and the fistula closed with catgut sutures (chromicized?). It was necessary to open the bladder above at a

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later date in order to remove a stone formed upon the sutures. He recommends detaching the margins of the fistula, the vesical walls from the vaginal, on all sides over an area 1.5 cm. in width. The tissues are then to be united by three rows of sutures of chromicized catgut. The first row unites the vaginal walls avoiding the mucous surface, the second draws the bladder walls together, while the third is intravesical on the margins. The wound in the bladder above is also closed in three layers.

Bertram (*Centralb. f. Gyn.*, 1904, vol. xxviii, p. 256) reports a case of fistula at the vault of the vagina after removal of a carcinomatous uterus. A colpeurynter was inserted in the rectum in order to push forward the posterior bladder wall, which was thus made so accessible through the suprapubic opening that the operation was quickly completed. The fistulous opening was closed by five through-and-through catgut sutures. The anterior bladder wall was then closed and the abdominal wound as well with the exception of a little hole for a small strip of gauze. The result was complete recovery.

Other methods of operating from above are the following:

Von Dittel (*Wiener klin. Woch.*, 1893, vol. vi, p. 449), after two unsuccessful vaginal operations on a large vesicocervicovaginal fistula associated with the destruction of the anterior uterine lip, undertook to cure the fistula by an abdominal operation. The uterus was drawn out of the abdominal incision, the vesicouterine plica of the peritoneum divided, and the bladder dissected loose from the uterus and the vagina, in this way exposing the fistulous opening on all sides; this was then denuded and sewed up. The vaginal portion of the opening was drained into the vagina. The operation failed on account of the patient's interference with the wound.

Chaput (*Soc. obstet. et gyn. de Paris*, 1893, Rep. *univ. d'obst. et de gyn.*, vol. viii, p. 293) operated after von Dittel's

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method in a case of a fistula caused by the extirpation of a hematosalpinx in a bicornuate uterus. The bladder was detached from the vagina through the abdominal wound and the wound in the bladder was closed by means of two rows of sutures traversing the muscularis without implicating the mucosa.

My associate, Dr. G. L. Hunner, tells me of the following case of vesicovaginal fistula complicated by a rectovaginal one, following a vaginal hysterectomy for pyosalpinx.

The patient was a nullipara, aged twenty-six years. The vagina was narrow and there were two openings in its vault. The adherent rectum was exposed by a suprapubic incision and then freed from the vagina. After this the fistulous tract in the rectal wall was excised and the edges, after being freshened, were closed by two running sutures, one of catgut and one of linen.

In order to expose the bladder fistula to better advantage, the vaginal vault was brought into the wound in the following manner: A strip of gauze was pushed partially through the opening in the vaginal vault from above, after which its lower end was knotted in the vagina. Traction on this gauze strip effectually brought the vaginal vault upward, and with it the bladder fistula, into an ideal working position in the abdominal wound, where it was closed in two layers with catgut. The rectal fistula healed.

Kelly (*Johns Hopkins Hosp. Bull.*, 1899, vol. x, p. 115), under a title "A New Operation for Vesicovaginal Fistula," reports a case of a very fat woman with a large ventral hernia who had a vesicovaginal fistula at the vault of the vagina following complete abdominal hysterectomy for fibroid of the uterus. Several operations from below had failed and it seemed hopeless, on account of the high position of the fistula, so fixed in scar tissue close to the peritoneum in a woman with very fatty buttocks and a deep vagina, to do any thorough operation with reasonable hope of success. The

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operator, therefore, opened the abdomen with the two-fold object of exposing and closing the fistula from above and then of curing the hernia. This operation was carried out in the latter part of 1898. In attempting to separate the bladder so as to liberate the opening, the tissues tore, and it was evidently impossible to secure any kind of a detachment which would permit of a satisfactory suture. An incision was then made into the bladder on its peritoneal side in order to expose the fistula and close it transvesically, by Trendelenburg's method. As this also could not be done, the incision at the vault of the bladder was continued down to the fistula and around it, cutting off a ring of the mucosa well within the bladder, extending from one side of the incision around to the other side. In this way the portion of the bladder involved in the fistula was thrown out of use by means of a series of catgut sutures tied in the bladder, bringing together the denuded surfaces in the bladder as well as the margins of the incision; the entire wound was closed, forming a new bladder a little smaller than the original one. An iodoform gauze drain was then inserted in the vagina through the fistula and into the peritoneal cavity. The abdominal wound was closed. The patient made a complete and perfect recovery without any interruption.

Maiss (*Centralb. f. Gyn.*, 1899, vol. xxiii, p. 1071) reports a case from Leopold's clinic in which a fistula was found in a woman who had been wearing a Mayer's ring for fifteen years to correct a prolapse. On removal of the wooden ring with a chain saw, a fistula easily admitting the finger was found near the left horizontal pubic ramus, completely imbedded in scar tissue, with the cervix uteri hauled up close by. An attempt was first made to close the fistula from below by means of incisions relieving the tension; in this way the situation was improved, but the fistula was not cured. The bladder was then opened above the symphysis by a horizontal incision. The fistula was found situated on the left side

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close to the neck of the bladder. After a three-quarters of an hour's hunt the left ureteral orifice could not be detected.

The fistula was treated by making an incision through the bladder walls extending down into the opening on one side, and then turning up the bladder walls on both sides of the incision and all around the fistula, after which the edges of the freed bladder were united with fine silk sutures, in this way completely covering the fistula and leaving it outside of the bladder. The orifice of the ureter was thus lifted up toward the bladder without having been found. The upper bladder and abdominal wound were then closed down to a small drain in the connective tissue. A catheter was left in the bladder for twenty-seven days, when it was removed. There was little leakage of urine by the vagina, but this soon ceased. The convalescence was further disturbed by a bed-sore, as well as by the breaking down of the upper wound by the escape of urine. The final result was complete recovery. She returned later on account of phosphatic stones forming on the silk threads in the bladder.

In a case of Leopold's, reported by Rosenthal (*Amer. Jour. Obst.*, 1893, vol. xxvii, p. 321) and others, there was a fistula high up in the cervix, with necrosis of the symphysis and a fistulous tract communicating with the bladder. It was at first the intention of the surgeon to operate by Trendelenburg's method, but on opening the bladder it was found impossible, on account of the high situation of the fistula and the condition of the symphysis, to make a direct closure of the opening. The case was then cured by starting at one angle of the vesical incision and extending a denudation around under the fistulous opening on the other side of the bladder and back to the incision; so that when the wound surfaces were united the affected fistulous area was excluded from the remaining part of the bladder. The space left in this way was partly obliterated by sutures and was in part tamponed and drained. Last of, all the necrotic bone was

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curetted away and the symphysis united with silver suture. The patient recovered, with a new bladder capable of holding urine for three hours, with the capacity of from 50 to 100 c.c.

For this case see also Teynac, "De la Cystotomie preliminaire appliquée au traitément de certaines fistules vésicogenitales," *Thèse de Bordeaux*, 1895.

Bardenheuer ("Verschluss grosser vesicovaginalen Fisteln durch Transplantation der Blasenwand," *Deut. med. Woch.*, 1891, vol. xvii, p. 1348) operated upon a large fistula with fixed margins by the transplantation of the bladder wall itself, by an autoplastic vesical operation. To carry out this method the bladder is exposed above the symphysis, when it is released from the surrounding tissues everywhere in the neighborhood of the fistula. After doing this the margins of the fistula are freshened and, as in one case, the posterior edge of the bladder can be drawn forward and attached to the anterior by means of silver wire sutures, introduced *per vaginam*. In a second case, where the classical operation had already failed, a suprapubic incision was made and the bladder was released on all sides and, after denudation of the fistulous margins, closed by suture without attempting to close the vaginal defect. In both of these cases Bardenheuer secured complete continence.

Frank (*Centralb. f. Gyn.*, 1894, vol. xviii, p. 493) operated on a fistula after Bardenheuer's method, which is to be recommended where the bladder, together with the uterus, is completely immobile, the fistula lies high up, and where the bladder cannot be loosened below. He began by freeing the peritoneum from the bladder, through an abdominal incision, as far as the vesicouterine pouch. The bladder was also freed, together with the uterus, from the pelvic wall by division of the surrounding fascia and the round ligaments; in this way an artificial descensus of the bladder and uterus was secured, so that the fistula could easily be attacked from below and closed by means of tier sutures of buried catgut.

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At the close of the operation the organs were again sewed in their normal positions.

Menge (*Centralb. f. Gyn.*, 1900, vol. xxiv, p. 339) reports a case from Zweifel's clinic in which there was a large fistula at the vaginal vault with entire destruction of the anterior uterine lip. On account of the condition of the tissues, an operation through the vagina seemed hopeless, so the abdomen was opened and numerous coils of intestines and many peritoneal adhesions detached. The uterus was found in anteversion and the left appendages imbedded in an inflammatory mass. An attempt was now made to detach the bladder and fistula from uterus and vagina by cutting through the vesicouterine plica and separating the tissues by blunt force, with finger and scissors, cutting here and there where necessary; in doing this a hematoma the size of a walnut was opened. The left ureter at orifice could not be found. A catheter was then inserted in the bladder through the urethra and the fistula was closed over this. Both uterine tubes were tied off to prevent further conception. The patient recovered from the operation and remained dry for six days, but on the sixth day the wound broke down and the urine began to run out of the vagina. The fistula, reduced in size, was now turned in toward the bladder by denuding the posterior uterine lip and sewing it to the vaginal wall below the fistula. After this the patient was continent until in some extraordinary manner she became pregnant. The child was born through a rupture in the scar at the vaginal vault; after the delivery, continence was re-established.

Schauta (*Monats. f. Geb. u. Gyn.*, 1895, vol. i, p. 8) recommends, in the case of large fistulæ with firm attachments to the bones, the plan of detaching the margin of the fistula from the bone by making a paravaginal incision through the tissues on the side of the fistula, which is then detached by means of a raspatory, the fistula being completely mobilized;

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in this way, after its margins are freshened, it can be closed without tension. Schauta's first operation of this kind was on December 21, 1892; a woman who had a fistula, about an inch and a half in diameter, in the upper anterior vaginal wall somewhat to the left of the median line, with the left ureter opening on the margin. There was no left or lower margin to the fistula where it ended abruptly on the bone. Schauta proceeded to set free the vagina, together with the fistula, from the fixation to the bone in the following manner:

He first made a vertical incision to the outer side of the left labium majus, continuing the dissection inward as far as the descending pubic ramus. The separation was then carried around the inner surface of the bone so as to separate the vagina from its attachments, care being taken to keep close to the bone itself, using both finger and an elevator; the dissection was continued as far in as the obturator foramen. The wound was now packed with iodoform gauze and the patient put in the knee-elbow position used by Bozeman, when a vaginal examination showed that the margins of the fistula were freely movable. The ureteral orifice was split up within to avoid including it in the sutures, after which the fistula was closed with silver wire sutures. This operation was successful in reducing the opening to the size of a hair. An attempt was made at a subsequent operation to get at this little fistula, but without material assistance, by means of Wickhoff's operation, which consists in the employment of symphysiotomy as a means of access to the bladder. (See *Wiener. klin. Woch.*, 1893, No. 11.) At a later date the vagina was detached once more from the pubic arch through an incision made above the symphysis, when the fistula was completely closed. Two cases were cured in this way.

Wertheim (*Centralb. f. Gyn.*, 1895, vol. xvix, p. 578) operated, according to Schauta's method, upon a case in which there were two fistulous openings—one the size of a

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kreutzer piece, the other the size of a bean—lying symmetrically on the descending pubic rami and firmly attached to the bones. First the left vaginal wall was dissected away and the bladder opening completely mobilized, after which the orifice was denuded and closed with buried sutures, when the vaginal wall was closed over the wound. The right side was carefully freed with a raspatory, the fistulous opening closed with buried sutures, and the paravaginovesical space drained with iodoform gauze. The patient made a good recovery.

Fritsch (1895) made use of an incision above the symphysis, accompanied by the detachment of the rectus muscles, in order to detach the bladder from the symphysis and to set the adherent fistula free. He found difficulty in doing this as in each case the bladder was torn. Schauta believes that this accident can be avoided by using an elevator and sticking close to the bones.

Schmit (*Centralb. f. Gyn.*, 1900, vol. xxiv, p. 1292) reported a case of a large defect of the vagina with destruction of the urethra and strong adhesions of the fistulous margins to the pubic rami. By using Schauta's method of freeing the bladder from the symphysis, the fistulous margins were easily brought together so as to restore the bladder and form a new urethra. In spite of this apparent success the patient was not able to control her urine.

Witzel (*Centralb. f. Gyn.*, 1900, vol. xxiv, p. 1337) reports a case in which he was successful in closing a large fistula which had already been operated upon three times unsuccessfully. The fistula, which measured 5 x 3 cm., was caused by the removal of a myomatous uterus.

The following operation was done: A strip of vaginal mucosa, 1.5 cm. in breadth above and at the sides, and 2 cm. below, was removed on all sides of the opening. A fine wire loop was then inserted through the vaginal wall on its posterior surface at a point opposite to the lower part of

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the fistula. This was to be used in drawing the vagina up into the fistula through an abdominal vesical opening.

The patient was then put into the Trendelenburg position, and the bladder opened by a transverse incision, 15 cm. long, which divided the recti muscles for two-thirds of their extent as well, 1 to 2 cm. above the symphysis. The bladder was pushed up by means of a finger introduced into the fistula, and then detached in front and at the sides by means of a blunt dissection with the finger from its bed of connective tissue, and in this way loosened as far down as the urethra.

A transverse opening was then made in the bladder 8 cm. long. The margins of the bladder were then attached to the skin wound by sutures on all sides for better exposure. The wire loop in the posterior wall of the vagina was now used to draw the posterior vaginal wall into the defect in the bladder. At the same time a second loop was passed through the upper posterior vaginal wall to aid in the traction.

The vaginal mucosa was now marked through on all sides by a superficial incision, so as to correspond to the form and size of the fistulous opening. The mucosa was then divided, so as to make the tissue corking the fistula about 1 cm. wider on all sides, after which the mucosa was raised all round so as to form a kind of cuff, which was drawn into the bladder with fine hooks.

The edges of the mushroom-like mass of posterior vaginal wall corking the opening then presented vertically toward the interior of the bladder. The cuff was attached on all sides to the undersurface of the corking mass by a series of buried sutures of fine silver wire; it was then easy to unite the free margin of the cuff with the edge of the vaginal wall lying in the vagina with very fine silk sutures on all sides. The bladder above was closed, and the abdominal wound was closed with drainage. The patient made a complete recovery.

A careful consideration of this group of cases just cited will

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show that each one of the various methods has been devised to overcome some peculiar set of difficulties. They one and all represent attempts, as I have already said, to cure a group of cases too frequently treated by colpocleisis in the past.

It is important to remark that *pari passu* with the development of these new methods of attack upon the fistulæ there has also been a concurrent improvement in the methods of treating fistulæ from below *per vaginam*. By dividing the vaginal wall, or by excising vaginal scar tissue, and by detaching the bladder from the vagina, extensive fistulæ can now be cured sometimes at one sitting which formerly required numerous operations, or were never cured at all.

The Schuchardt vaginal incision is invaluable in making the vaginal wall accessible in a stenosed vagina. The paravaginal incision to detach fistulas adherent to the bone is also an invaluable procedure. Also in those cases of fistulæ extensively and badly adherent to the bone, the incision above the symphysis will occasionally prove of the utmost value in setting free the margins of the bladder, which can then be united below.

I think the Trendelenburg operation, in the strict sense, namely, one in which there is a direct denudation and suture of the margins of the fistula, is one which will more and more rarely be called for in the future. There is room, however, for occasional transvesical operations in which the mucosa is denuded on all sides at a distance from the fistula, and the raw surfaces are then sutured, so as to throw the fistulous area entirely outside of the bladder.

Let me emphasize the fact that any sutures appearing on the vesical surface should be of catgut and that not chromicized.

The operation for vesicouterine and vesicocervical and vesicocervicovaginal fistula by the transperitoneal route is one of value and often of comparative simplicity.

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The superior operation is often to be preferred in fistulæ caused by a total extirpation of the uterus, whether for myoma or for cancer. The difficulties of satisfactory exposure from below are often great in these cases.

I prefer the superior operation when there is extensive pelvic inflammatory disease in which there is a vesicovaginal fistula, and have used it in the following case:

Kelly (*Johns Hopkins Hosp. Bull.*, 1899). S. B., Gyn. No. 6135, married, aged thirty-two years, negress, had a vesicovaginal fistula high up, measuring 3.5 cm. in diameter; associated with this she had a fibroid uterus and pelvic inflammatory disease, with a large pelvic abscess.

I operated on June 4, 1898, and removed the large uterus with a densely adherent and inflamed tube on either side, doing a supravaginal amputation. After removal of these structures an abscess at the bottom of the pelvis was ruptured and discharged pus abundantly. The adherent bladder was separated from the uterus and was opened in amputating the cervix. Passing the finger into the bladder through this opening and across a bridge of tissue, it re-entered the vagina through the fistulous orifice. The bladder was now detached from its peritoneum above and from the vagina below around the anterior margin of the fistula, and then turned in on itself by a series of interrupted catgut sutures, thus closing or rather excluding the fistula. The bladder was then drained by means of a self-retaining catheter. The result was a complete recovery, and the patient was able to go home in a month's time.

In all these operations the bladder ought to be drained by the urethra and kept clean by repeated gentle irrigations of warm boric acid.

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DISCUSSION ON THE PAPERS OF DRS. WILLIAM S. STONE, I. S. STONE, AND KELLY.

DR. HENRY P. NEWMAN.—I would like to mention a case in point which serves to illustrate how greatly the operative indications may vary in these fistulæ, and how difficult the surgical problems may be which arise from them. The patient, a dwarf, had suffered from hip joint disease in early life, had a deformed pelvis and was tubercular. She was married and had a most disastrous pregnancy. Where a Cesarean section should have been done there had been practised forcible delivery through the contracted pelvis, resulting in desperate mutilation of the pelvic tissues. Attempts at repair had finished the destruction of what remained, so that, when the woman came to me, the urethra was gone and there was entire absence of the anterior vaginal wall. There was nothing in evidence but cicatricial tissue. The necessities of the case were beyond the scope of hitherto contrived methods and led me to work out a procedure based on the conditions presented. My plan was to take the uterus, which, by the way, was hyperinvoluted and useless as far as its normal functions were concerned, invert it and draw it down so that it could be utilized to form a floor to the bladder, an anterior vaginal wall and a urethra. I cannot go into details of the procedure here—they would not be clear without drawings—but it may be found in the *Jour. Amer. Med. Assoc.*, August 9, 1902. I would like to say, however, that it is not at all the operation of Freund, which simply draws down the uterus without inversion. It was this turning of the organ upside down and making an artificial opening into its cavity through its anterior wall which was to furnish the urethral channel and the external and internal meati. The anterior wall of the uterus was to fill the gap in the anterior vaginal wall, an artificial opening in the body of the uterus to connect with the cervix and form a substitute for the destroyed urethra. The case was most interesting and it is regrettable that the tubercular condition of the patient rendered prolonged confinement in bed and repeated operating so hazardous that the desirable plastic work was never completed. I wished her to come back to the hospital after periods of rest; but her relief,

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though only relative, was so satisfactory to her that she discontinued treatment. This case might never have its counterpart; but it goes to show to what extent, in these cases of fistulæ, with destruction of tissue from accidental and traumatic causes, we are liable to be called upon to suit our methods to individual cases.

DR. REUBEN PETERSON.—I would like to put on record a case where it was impossible to make any repair of the fistulous opening because the sphincter muscles of the bladder were entirely destroyed. There was a suspicious growth about the meatus, which I removed, together with almost the entire urethra. She had vesical incontinence following the operation, and a prolapse of the bladder through the opening, so that it came outside as large as an English walnut, and, having no control over the urine, she was in a pitiable condition. I sewed up the opening and made another opening from the bladder into the vagina. This relieved her, so far as the prolapse of the bladder was concerned, but still she had incontinence and begged me to do something else. From my experiments on the ureters I found that wherever we leave the ureteral openings in the bladder intact, no ascending infection occurs. So I told her that it would be a feasible operation to make a hole into the rectum from the vagina, and then sew up the vagina. This operation has been performed by Rose for similar conditions, and I thought this would apply to the operations we are discussing, where it is impossible by any operative means to close the vaginal openings. I made, of course, a vesicovaginorectal fistula, and she passed her urine down into the vagina and into the rectum, and retained it for three or four hours, then passed it without any particular difficulty. For a time she was quite content, but I had had nothing to go by particularly in performing the operation. I did not know how large to make the openings, and the one between the vagina and the rectum gradually closed. So I dilated and enlarged this opening and took occasion to draw off the urine from the bladder, examined it carefully, and found there was absolutely no infection. She was all right for a while, and then it was found I had not made the vesicovaginal fistula large enough, and she began to have symptoms from that. I dilated this opening and found a

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calculus in the bladder, which was removed and its fistulous opening enlarged. This was a number of months ago, and at present the woman is comfortable; she passes her urine by way of the rectum every three hours. There is no infection. I would recommend this operation for fistulæ which cannot be repaired by the methods that have been described, and for just such cases as Dr. Newman has described.

DR. CHARLES P. NOBLE.—Some years ago I had the case of a woman who fell into the hands of a quack, who cut away her urethra and much of the base of the bladder. He operated on her eight or nine times. She came under the care of a Fellow of this Society, who operated on her a number of more times. My recollection is that she had been operated on at least a dozen times when I saw her. The urethra was entirely gone. You could see where it had been by the split in the mucous membrane. There was a large vesicovaginal fistula besides. The entire neck of the bladder was gone. She had no sphincter vesicæ. I operated on her, simply pegging away as my predecessors had done, and apparently cured her. Then she went home with the bladder and urethra intact and was able to retain her urine for some hours. At the time of the operation I used the Emmet method of deep longitudinal incisions. She had only been home a short time when contraction of the lateral scars had pulled open the urethral union, and the trouble recurred. I then repeated the operation by a plan which I thought would be successful, but it did not heal. It was clear to me that, as the woman had been operated on some thirteen or fourteen times unsuccessfully and was becoming mentally unbalanced, we had to devise an operation to fit the case. In studying the case thoroughly, it seemed that nature very kindly furnished us with a fine flap to use, and I unfolded the labium minus and got a very nice flap to cover the defect, made a good urethra, covered over the fistula in the bladder, and the patient made a good recovery. By simply using a small tampon, which she inserts, she can go all right without difficulty in urination. She can sleep eight hours at night without getting up. It has been ten years since the operation was done. She inserts this tampon in the vagina each morning, and has no trouble whatever. So whenever there is not sufficient tissue, particularly in the anterior

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part of the vagina, one can make a new urethra by utilizing the labium minus.

I read all the literature at that time, and I could find only two cases in which the urethra had been restored with permanent success. Emmet restored quite a number, but they were all subsequent failures. My recollection is that one case was reported by Olshausen in which a midwife slit up the urethra. The second case I have forgotten. The rest were all failures. Instead of making the new urethra stop at its normal site I continued it on to the clitoris, so that the end of the urethra is at the clitoris. If the bladder fills up and the bladder rises into the abdomen it pulls on the neck of the bladder, and in that way imitates the sphincter vesicæ. At all events, the result of the procedure was satisfactory.

Dr. George H. Noble.—I shall not refer to small fistulæ, as recent improvements in surgical technique make relief of such cases an easy matter.

In one of my cases of large fistulæ, the entire base of the bladder and anterior extremities of the ureters were destroyed, the bladder was thickened and so much contracted, it became necessary to take large flaps from the wall of the vagina to close the opening. I cut half way down the sides of the vagina, and after liberating the flaps, brought them together over the fistulous opening, by sutures in the median line. I attempted to approximate the vaginal mucous membrane over the wound, but could not do so without seriously constricting the vagina; the uterus was brought down, and the cervix stitched to the vaginal margin of the urethra, and not to its vesical margin. This was done for the purpose of covering the raw surface, to prevent infection of sutures and contraction of the vagina. After six months' time, the vagina had become very much dilated and elongated. I then made an incision around the cervix, as in vaginal hysterectomy, continued it backward under Douglas' pouch, separated the uterus from the vagina and bladder, and pushed it back to its normal position. The vaginal mucous membrane behind the cervix was brought forward and stitched together in front of the uterus, succesfully covering all raw surface. In this instance, the object of stitching the cervix to the vaginal and not the vesical margin of the urethra,

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was to enable its subsequent separation and replacement without opening the bladder, the uterus being thus drawn down was fastened to the urethra only temporarily. In another instance, I had great difficulty in closing the fistula where there had been shoulder presentation with impaction for a number of hours. The physician decapitated by sawing the neck through with a cord. The next day, urine escaped through the vagina. When she came into my hands, the bladder was open in the vertical line backward through the cervix and into the cavity of the uterus as high as the peritoneal reflection. The uterus and appendages were fixed by pelvic exudate, and, as the patient refused abdominal section, the operation was extremely difficult. After separating the bladder from the vagina and uterus, the ureters stretched across the cavity like a couple of cords, and would not permit the bladder to prolapse far enough to reach the superior angle of the fistula. It became necessary then to make a suprapubic extraperitoneal opening between the recti muscles. Through this incision, I closed the laceration in the cervix and body of the uterus, sutured the bladder together as far as the level of the ureters, a distance of three inches. I then closed the suprapubic wound. The remaining portion of the fistula, about two and a half inches, was closed through the vagina.

The operation was extremely difficult, and should not have been undertaken until after the removal of the appendages and relief of pelvic exudate. In such circumstances, the uterus would have been more movable.

I desire to emphasize the point brought out by Dr. Kelly, that all pelvic complications should be attended to before operating upon these fistulæ. I have seen a number of failures due to pelvic complications, where the tissues were fixed, resulting in excessive tension upon the sutures, and have known ovarian tumors with short pedicles to draw the uterus high in the pelvis, making the operation difficult. A case of this kind came into my hands after having had six different operations, but I found, after removing the tumor, closing of the fistula a very easy matter.

The most intractable cases are where the sphincter muscles of the neck of the bladder and urethra have been lost. A few successful cases have been reported, but, when continence is

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effected, it is secured through mechanical principles. In two cases, I dissected the vagina from the bladder, making a V-shaped flap, and dissected away the mucous membrane beneath the pubic arch, except a narrow strip one-fourth inch wide. This was left as a lining for the new urethra. The triangular vaginal flap, taken from the trigonum, was then brought forward and anchored as close to the clitoris as possible, using mattress sutures on either side of the narrow strip of mucous membrane beneath the pubic arch. The bladder was then drained by an opening made in the vesicovaginal septum, the object being to prevent urinary infiltration into the wound.

I believe it is a mistake to attempt formation of a new urethra around a catheter or other hard instrument. It interferes with success by holding open the parts at the neck of the bladder. The new urethra should be made as small as possible, consistent with comfortable micturition. The mechanical principles in this operation are: First, the narrow urethra; second, pressure upon the artificial urethra through the tension exerted by the vaginal flap, as it has a tendency to draw the parts backward.

Dr. Kelly is to be congratulated upon his resection of the bladder for fistula, as it is an exceptional case, and I know of only one other of the kind. It was done by Leopold. The case was reported by Jacob Rosenthal, and abstracted by the *American Journal of Obstetrics*, March, 1895, p. 321. Leopold's resection was in the transverse direction, instead of the vertical or median line as Kelly's was done.

DR. WILLIAM S. STONE.—I intended in my paper to simply bring out the principles from which our present methods of operating on fistulæ have been developed.

In regard to the case mentioned by Dr. Peterson, the method he used was similar to an operation done by Rose, except that he went a step further than Dr. Peterson did in his case, in that he successfully turned the fistula outside by making two openings in the anterior rectal wall and through the sphincter ani, thus making a separate passage for the fistulous tract.

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SHORTENING OF THE ROUND LIGAMENTS WITHIN THE INGUINAL CANALS THROUGH A SINGLE SUPRAPUBIC TRANSVERSE OR MEDIAN LONGITUDINAL INCISION.

By Reuben Peterson, M.D.,
Ann Arbor, Mich.

I desire to call your attention to a method of shortening the round ligaments which I employed during the past year in a considerable number of cases. For aught I know others may have used the same method. I am not seeking to claim priority for the operation, although as far as I know it is original, for I have not read of or seen a similar technique.

Alexander's operation of shortening the round ligaments within the inguinal canals for the relief of backward displacements of the uterus has always been a favorite with me. In properly selected cases there are fewer relapses than with the other operations devised for the same purpose. And this statement is made deliberately after a careful trial of nearly all the principal operations of this class, together with a great many modifications which have been brought forward during the past fifteen years. After this operation there are rarely any of those disagreeable dragging pains in and about the bladder which too often follow other retrodisplacement operations. The principle of the operation has always appealed to me. It is not an attempt to support the uterus by the formation of new ligaments, but the fundus is held forward by shortening an already existing ligament. It can stand the test of future pregnancies, as shown by numerous

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cases of my own as well as the testimony of other operators. Still, in spite of its merits, Alexander's operation has its disadvantages, which may be briefly stated as follows:

1. The operation is limited in its scope, since it must be reserved for perfectly movable, non-adherent uteri. This is a serious disadvantage, since, besides limiting the operation to a comparatively few cases, it opens the way to failure in case adhesions are overlooked prior to the operation. Every operator must confess to such mistakes in diagnosis. Fine adhesions about the appendages and posterior part of the uterus and rectum sometimes escape the most expert examiner. They do not prevent the reposition of the uterus, but they exert a strain in the opposite direction when the uterus is held forward by the shortened ligaments. Pain and discomfort, and not relief of the symptoms, are the results.

2. Each ligament has to be shortened by a separate incision in the inguinal region. Hence there is a double chance for suppuration. Because of its position and liability to contamination there is more of a tendency to suppuration after Alexander's operation than after other operations. This has been testified to by many operators and is borne out by my own experience. That it must be due to the location of the skin incision, is shown by the marked improvement since the present technic has been adopted, although essentially the same method is employed for isolating and suturing the ligament.

3. Alexander's operation can not be used as an adjunct to other intrapelvic work since it would necessitate three skin incisions, which for obvious reasons cannot be considered.

In the operation here submitted for your consideration an attempt has been made:

1. To develop a technic which should be applicable to all cases of uterine displacement requiring relief by an operative procedure.

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2. To perform the work through one incision.

A considerable experience with the transverse incision for intrapelvic work led me to try this incision first. I was surprised to find how easily the external inguinal rings could be uncovered by a transverse incision less than three inches in length. The remainder of the technic has been developed step by step and is as follows:

TECHNIQUE OF OPERATION. With the patient in a moderate Trendelenburg position, the spines of the pubes are located by the thumb and forefinger of the left hand. A transverse incision is made through the suprapubic fat down to the fascia, slightly above an imaginary line joining these two points. The length of this incision will vary with the case, but even in the most obese patients it need not be more than two and a half inches. The deeper portions of the incision can be cleared of the loose tissue by a few transverse strokes of the scalpel. The upper portion of the incision is now drawn upward by retractors and the fascia exposed with scalpel or sponge for a distance of two or more inches, depending upon the amount of intrapelvic work to be done, which will naturally determine the length of the longitudinal incision through fascia and peritoneum. For the ordinary case a small incision admitting the index and middle fingers will suffice. Care must be taken after separating the muscles, and before opening the cavity, to seize the peritoneum as far away from the pubes as possible. In this way it is always possible to avoid opening the bladder, even when the latter is carried abnormally upward. Through this small peritoneal incision all ordinary intrapelvic work can be accomplished. Adhesions of appendages and uterus should be released and the diseased organs resected or removed. Ordinarily the appendix can be inspected and removed, if necessary, through this same incisinon.

Small retractors are next inserted into the transverse incision and the tissues pulled outward. The guide to the

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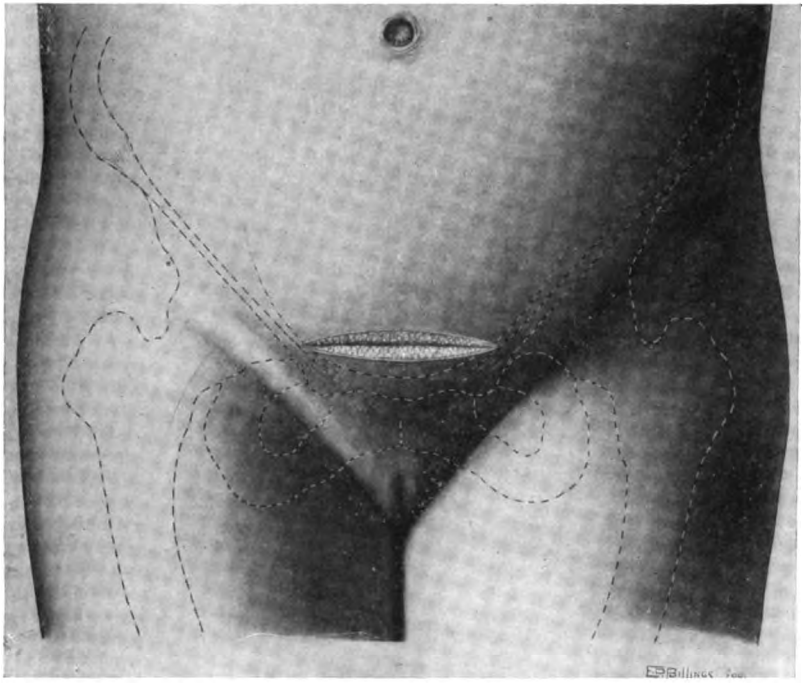

FIG. 1.—Surgical landmarks and transverse incision. Latter should be made slightly above imaginary line uniting the spines of the pubes. For the ordinary case, an incision 2½ inches in length will suffice.

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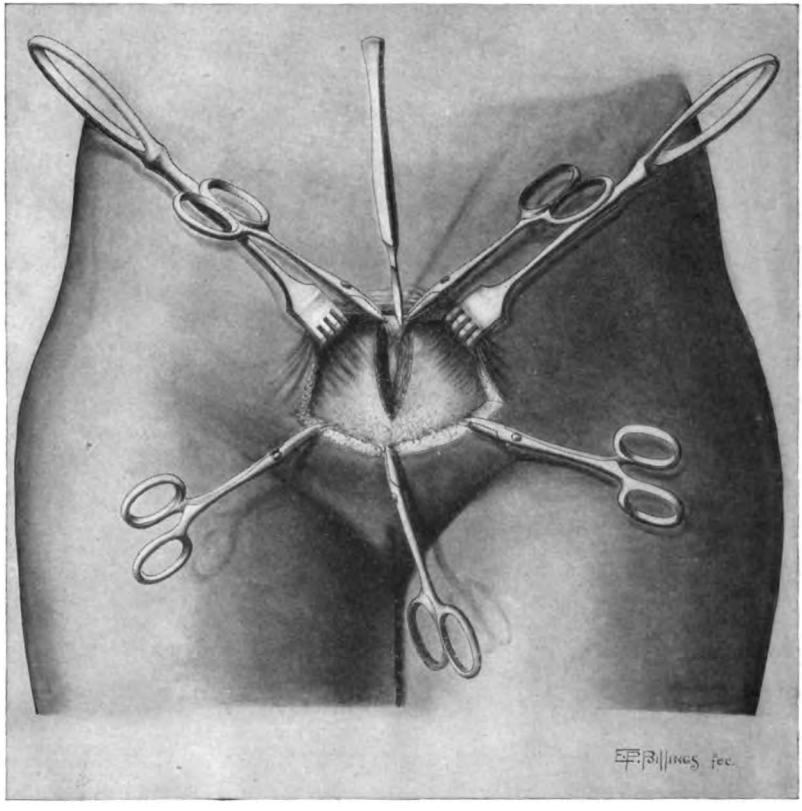

FIG. 2.—Exposure of fascia and carrying upward of one edge of transverse incision. Longitudinal incision 1½ inches in length in fascia. Shows separation of muscles and method of opening peritoneal cavity.

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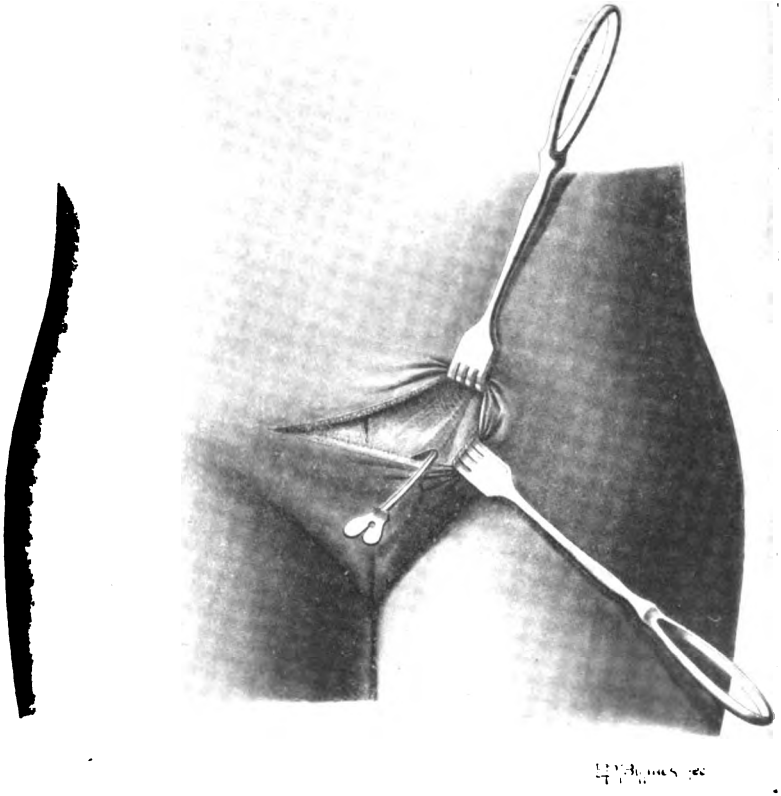

FIG. 3.—Showing method of exposure of external inguinal ring, which is situated always at the base of the spine of the pubes. Insertion of grooved director.

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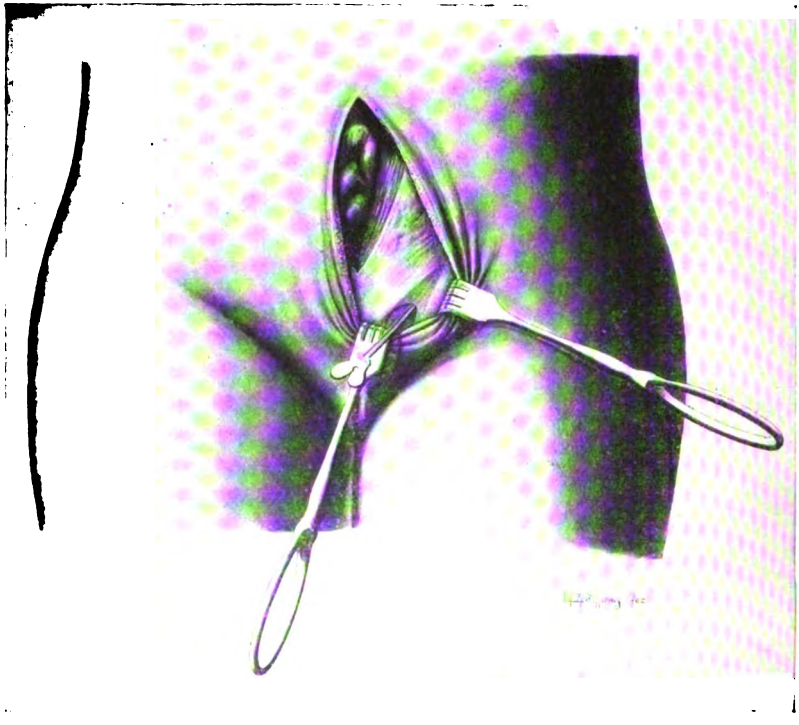

FIG. 4.—Showing method of exposure of external inguinal ring when longitudinal median incision is employed.

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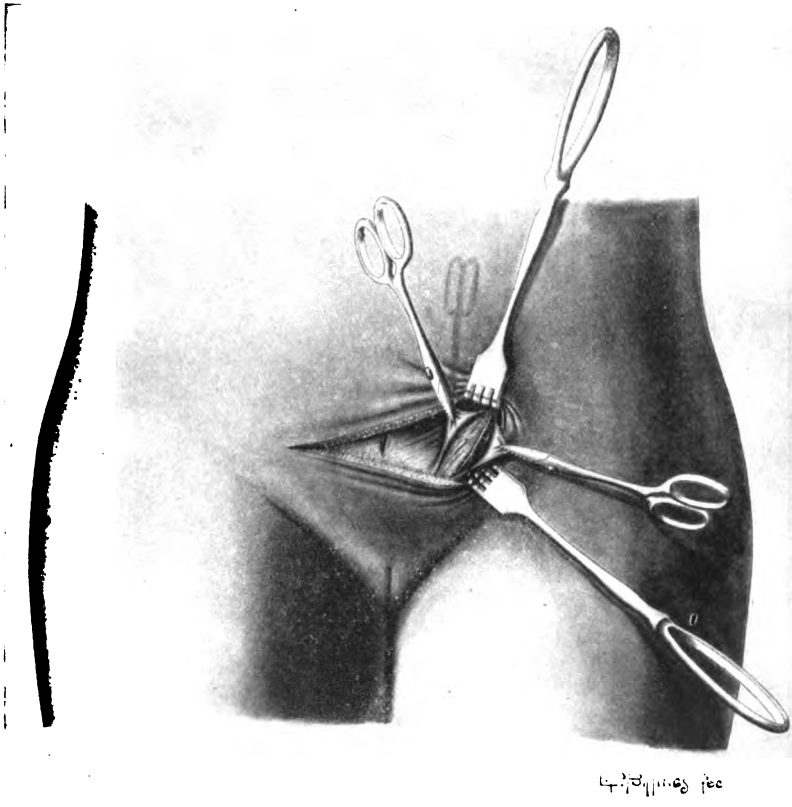

FIG. 5.—Fascia split upward for about 1¼ inches. Contents of inguinal canal exposed. Isolation of genital branch of the genitocrural nerve.

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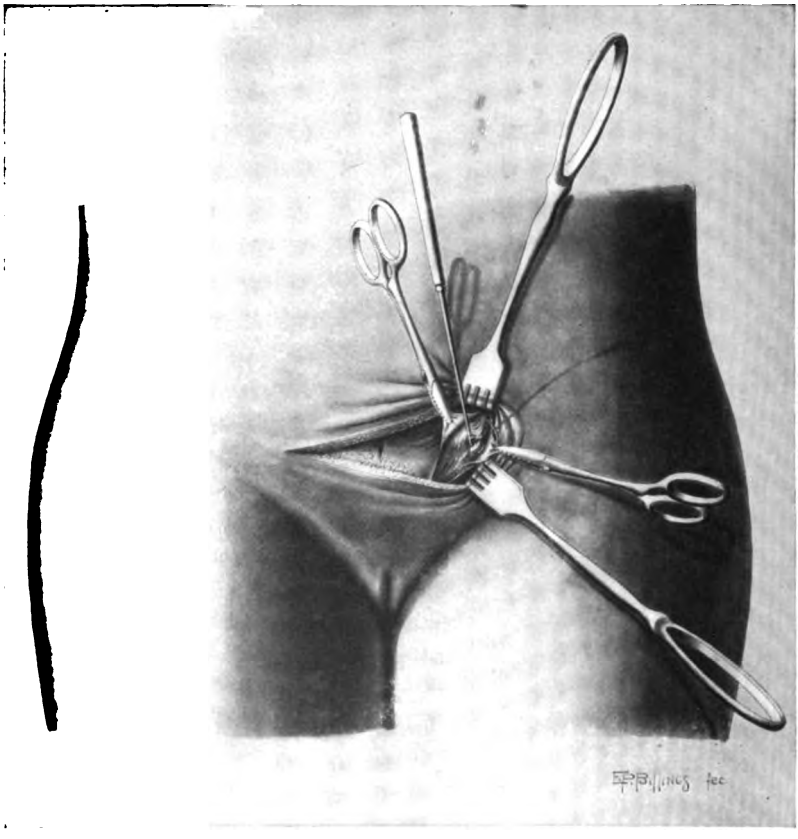

FIG. 6.—Nerve held outside of external edge of fascia to prevent injury while search is made for round ligament Latter always lies at the edge of and just underneath muscle.

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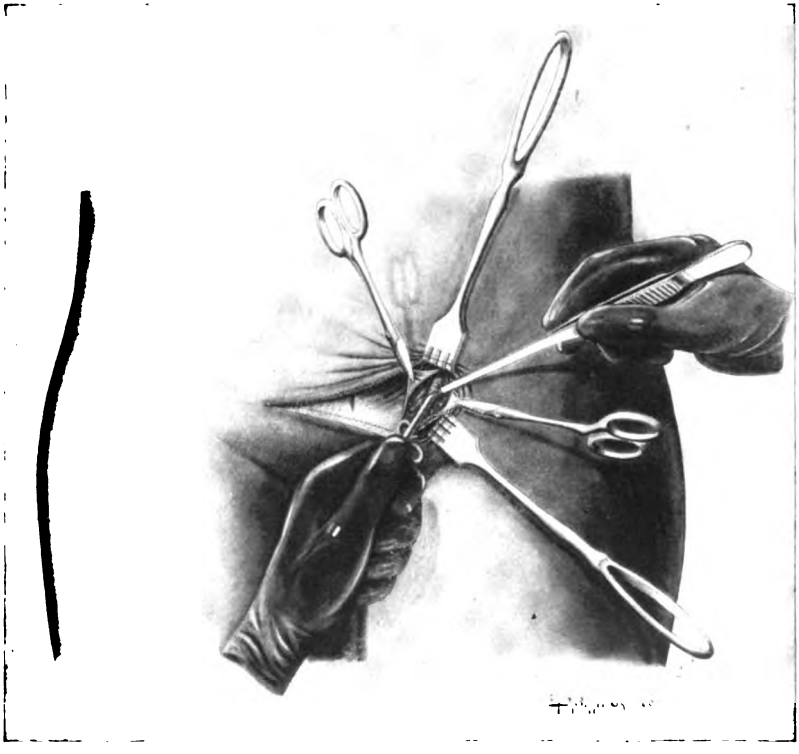

FIG. 7.—Showing method of stripping peritoneum from round ligament

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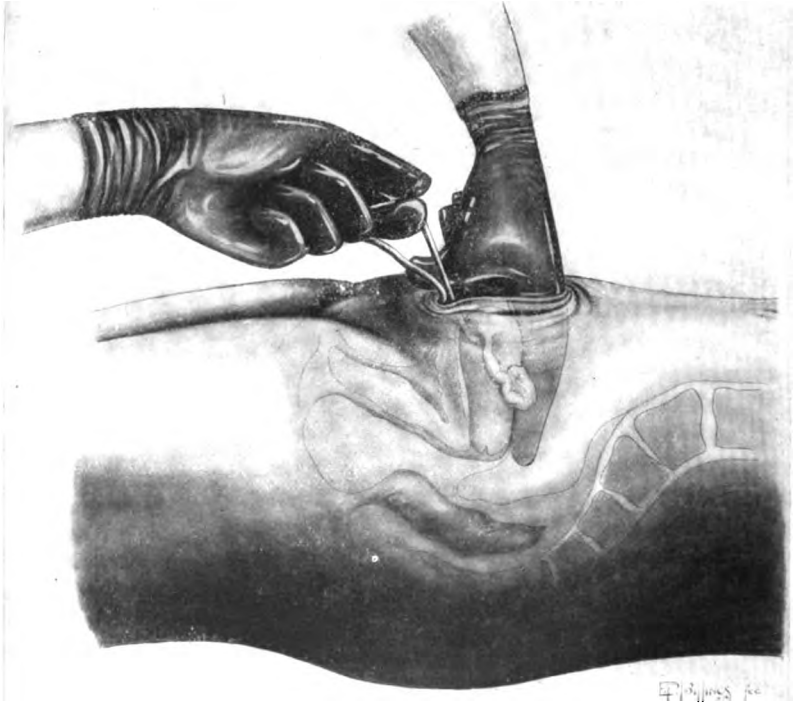

FIG. 8.—Two fingers passed through the short peritoneal incision determine how much round ligaments should be shortened and exact position of fundus and cervix.

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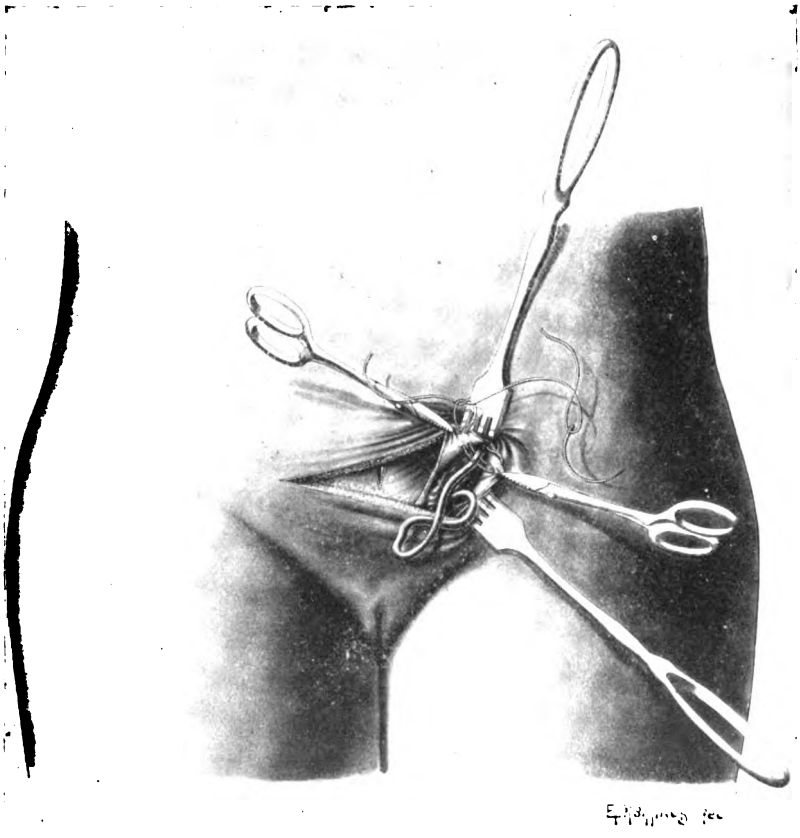

FIG. 9.—Method of suturing round ligament. Mattress suture of twenty-day catgut passed through two edges of the fascia and twice through the ligament.

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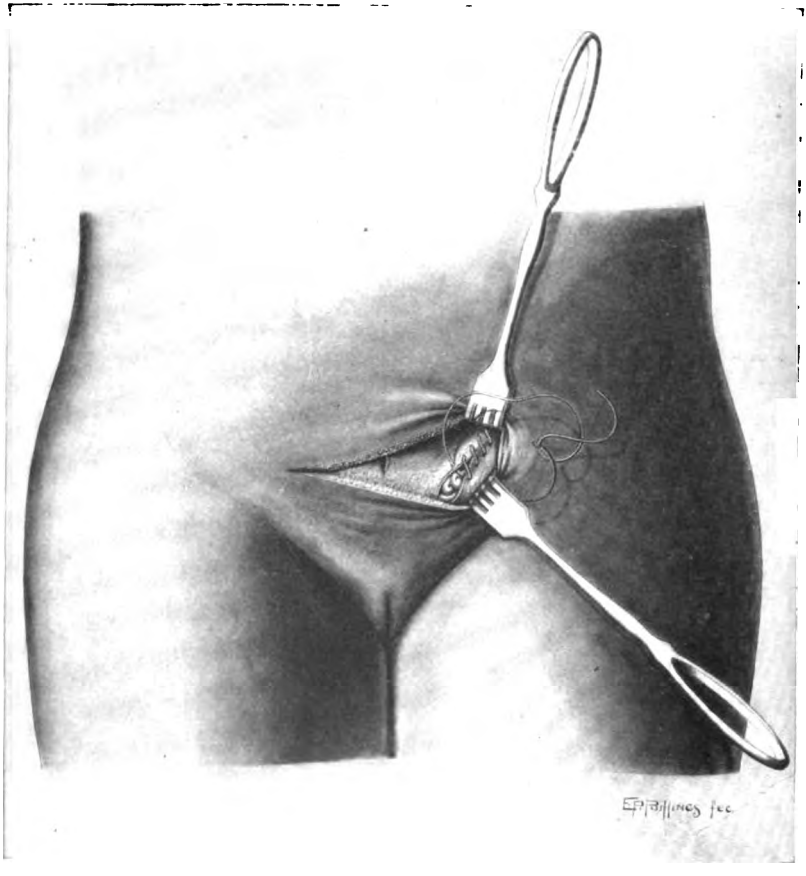

FIG. 10.—The round ligament is not cut off, but the shortened portion is replaced in canal. Edges of fascia united by a continuous catgut suture.

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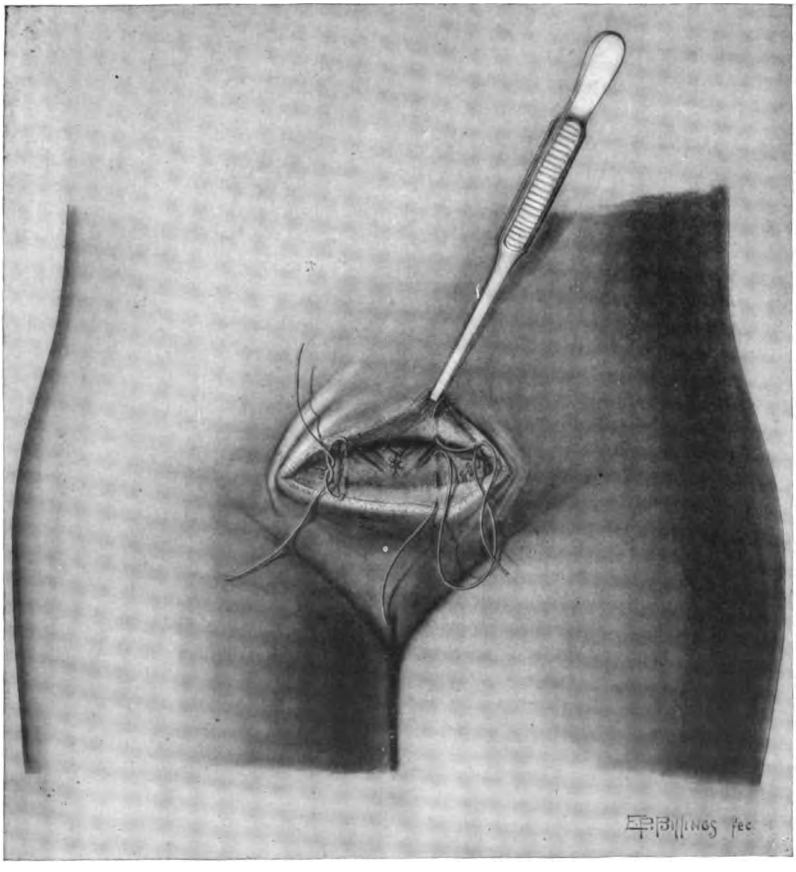

FIG. 11.—Showing method of passing deep catgut sutures so as to do away with any dead space.

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external ring will be the spine of the pubes at the base at which it will always be found. A few strokes of the knife will expose the ring, the edges of which should be carefully cleared. The upper wall of the canal should now be divided upward for about an inch, a grooved director being used as a guide. The contents of the canal are now fully exposed. The edges of the fascia should be seized with hemostats and drawn outward and inward and the under surface of the fascia cleared for a distance of half an inch. The ilioinguinal nerve should now be sought for, carefully isolated and preserved from injury by being passed outside the outer edge of the fascia and held in this position by the hemostat which grasps the fascia.

The round ligament will almost invariably be found lying just at the edge of and slightly underneath the muscle. It will be easily found if the contents of the canal are not unduly disturbed and its relations thereby destroyed. With the forefinger palpate and locate the internal inguinal ring. Then seize a small amount of the tissue lying to the outside of the muscle and roll the latter upward. The white fibres of the ligament at once appear. Seize the tissues well down toward the internal ring, so as to avoid breaking the ligament. Then strip the latter of its peritoneal covering in the usual manner. After two or three inches of the ligament have been drawn out, steady the latter with the left hand and insert the fingers of the other hand into the abdominal cavity in order to determine the proper position of the uterus and the degree of shortening of the ligament to be secured. Mark this by seizing the ligament with a hemostat at the point it emerges from the internal ring. The opposite ligament should be located and shortened in a similar manner. After marking the degree of shortening of the second ligament, make a final intrapelvic examination in order to be sure that the uterus is in the median line, that the fundus is forward and that the cervix points backward.

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The nerve should now be released and dropped to the bottom of the canal. The round ligament is secured by a mattress suture of catgut, which starts just beneath the edge of the fascia, passes through the ligament just above the hemostat, catches the fascia of the opposite side just below its edge and then is passed back again through the ligament below the hemostat. After catching the side of the fascia from which it started, the suture is securely tied. The loose end of the ligament is not cut away but is dropped back into the canal. The cut edges of the fascia are now united with a continuous catgut suture.

The incision through the peritoneum is closed with catgut in layers. All dead spaces at the depths of the incision are avoided by passing a number of interrupted catgut sutures through both edges of the incision, including in the centre of the suture a small portion of the fascia. The skin incision can be closed according to the operator's desires.

If extensive abdominal work is to be done, the median longitudinal is preferable to the transverse incision, although almost everything *can* be done through the latter.

If the median longitudinal incision be started just above the pubes, the inguinal rings can be exposed almost as readily as through the transverse incision. Again, if the operator prefers the longitudinal to the transverse incision, in the simpler pelvic cases he need only employ a very small incision as far as shortening the ligaments is concerned. An incision not more than two and a half inches in length will suffice.

In the University of Michigan Gynecologic Clinic the operation I have described has been performed upon fifty-five patients. In forty-six cases the transverse and in nine cases the longitudinal incision was employed. The ligaments have been readily found in almost all the cases. They were always present. They were once or twice very small. Once or twice they broke as they were being stripped, necessi-

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tating the passing of a forceps through the internal ring, a puncture of the parietal peritoneum and the seizure of the ligament within the abdomen near the horn of the uterus. Such an accident, however, is liable to happen occasionally and at once shows the advantages of the present over the old technique. In Alexander's operation, where such an accident occurs, an additional median incision becomes imperative.

Too short a time has elapsed to speak of the ultimate results of the series of operations mentioned above. As far as known there have been no relapses.

DISCUSSION.

DR. GEORGE M. EDEBOHLS.—I have been very much interested in Dr. Peterson's paper. First of all, because, as regards the question of the operation of choice for retroversion of the uterus, I still maintain the position which I adopted many years ago, namely, that we have nothing better in the way of a retroversion operation than inguinal shortening of the round ligaments. I still regard it as the best operation for the non-complicated cases, where there are no adhesions of the uterus, tubes or ovaries, and I value it highly even in many cases where these complications exist in a mild degree; where the uterus and ovaries are not greatly or markedly diseased and but moderately adherent.

I have occasionally employed the single transverse incision in doing an Alexander operation, but fail to find any real advantage over the double incision. In the single incision you need just twice the length of each of the two incisions as usually made. One of the advantages claimed for the transverse incision is that it falls entirely within the line of growth of the pubic hair. But so do both of the incisions usually employed, if properly made. When employing the single transverse incision for the Alexander operation, I prefer a semicircular incision, with the convexity downward. This brings you right down upon the real field of work, the inguinal canal of either side.

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The next step of Dr. Peterson's operation, and one that is original and peculiar to it, so far as I know, is the additional median incision. That, in my opinion, is the weak point of the operation, in that it is totally superfluous and unnecessary.

One objection advanced against the Alexander operation has been the fact that it is a little complicated. A bilateral operation is required; a nice dissection must be made on both sides; the ligaments must be found, shortened, adjusted, etc. We do not want to add force to these objections by adding further complications, by making still another incision, calling for still more work. All that we may gain by an additional incision in the median line can be gained equally well in the Alexander operation, as ordinarily performed, by a little modification which dates back many years, when it was practised about simultaneously by Dr. Polk and myself. Shortly afterward, Goldspohn, of Chicago, began to work enthusiastically in the same direction, and by his frequent contributions to the subject succeeded in establishing the procedure, which came to be known as Goldspohn's modification of the Alexander operation, and rightly so, because neither Dr. Polk nor myself ever made much of the point. Goldspohn's modification consists simply in opening the internal inguinal ring at the bottom of the canal, stretching the ring, introducing the finger, liberating whatever adhesions of the uterus, tubes and ovaries may be found, and bringing the ovaries and tubes into the wound for either radical or conservative surgical treatment, as may be found indicated. By virtue of this modification, the Alexander operation becomes applicable to cases of retroversion associated with slight adhesions of the uterus and adnexa. Therefore, I object to the additional median incision, as the routine procedure, although I have twice made it exactly as described by Dr. Peterson, for the removal of a diseased vermiform appendix, while doing an Alexander.

One of the objections to the Alexander operation, that we are likely to get suppuration in the incisions, I do not consider valid or well founded. In my last two hundred Alexander operations, involving four hundred incisions, I have not failed to get full primary union in every instance. Asepsis can be maintained by proper protection of the wounds and care-

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ful bandaging here just as well as in any other part of the body.

DR. T. J. WATKINS.—It seems to me that a longitudinal incision is usually better than a transverse incision. I have given up the transverse incision entirely on account of the frequent involvement of the appendix. It is much easier to remove an appendix through a longitudinal incision and, as Dr. Peterson has remarked, the inguinal rings can be reached through a longitudinal incision.

Furthermore, in many of these cases there is a question as to the condition of the gall-bladder, and one desires to make an incision large enough to introduce the hand to explore the gall-bladder, which can be done much better through a longitudinal incision. Again, one occasionally desires to explore the stomach as to its size and location, as to the thickness of its wall, and the like.

This operation, I believe, is not quite as good as the operation that has been described, where the round ligaments are not stripped of peritoneum. As the doctor said, the round ligament here is stripped. A similar operation to this has been described and reported by Dr. Barrett, of Chicago. I suppose others have done the operation, where the peritoneum is brought up with the round ligament. Stripping the round ligament must weaken it. The peritoneum has considerable strength, as well as the connective tissue, and in stripping the round ligament one is sure to leave some muscular fibers with the peritoneum.

Our President yesterday drew attention to the great importance of the pelvic floor, and I am certain that Dr. Peterson always looks after that in conjunction with these operations. The President also directed our attention to a very important point, and that was that prolapse in these cases is quite as important as the retroposition. An objection that has seemed to be a good one to most round ligament operations is that they pull the body toward the pubes, and thus increase instead of diminish the prolapse. To overcome this objection to the operation, Dr. Frank Andrews, whom we elected a member yesterday, has devised an excellent operation which consists in puncturing the broad ligament on either side, underneath the tubo-ovarian ligament, grasping the round ligament, pulling the round liga-

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ment through the opening on either side, stitching the round ligaments together posterior to the body of the uterus, and also stitching them to the posterior surface of the uterus. This not only holds the corpus uteri forward, but it tilts the uterus so as to overcome the prolapse. It throws the cervix upward and backward. It twists the broad ligament, so as to raise the uterus decidedly higher in the pelvic cavity.

Another valuable consideration in these suspensory operations is the great liability to recurrence. We know that it is physiological for connective tissue to always stretch when subjected to more or less continued tension, and in many of these suspensory operations the line of union is subjected to more or less continued tension and gradually stretched out. Where the body is tilted decidedly forward, there is very little tension upon the line of suture and consequently very little danger of recurrence.

DR. SETH C. GORDON.—I have tried nearly all of these various operations for suspending the uterus. I abandoned the original Alexander operation a good while ago, and I found in talking with Dr. Alexander three or four years ago that he had practically given it up himself. So far as the limitation of adhesions is concerned, he said to me, "I use it in cases where I am sure that the uterus can be brought forward without any difficulty. But I am not a stickler for it so much as I was at one time." I have tried the other modifications of the Alexander operation, but within the last four years I have generally used but one operation. It is the operation which was first described by Tod Gilliam, of Columbus, Ohio, and later by my own assistant, working independently of and ignorant of Gilliam's operation,—Dr. W. L. Cousins. It consists of making an incision, two inches longitudinally, in the middle line. You can palpate the appendix, bring it into line so that you can remove it if necessary; then a pair of pinch forceps (after dissecting back the skin, the fat beneath the skin, and the integument over the fascia) is passed down through the fascia, muscle and peritoneum. Previous to doing that, however, take a needle threaded with ordinary silk (because it holds better), carry it under the round ligament two inches from the uterus; then with the forceps I catch the silk and bring the round ligament up through the wall in a loop and stitch each part of the loop to the fascia. Ordinarily, I turn

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down the top of the loop and take a stitch there. I do that on each side. The loop is made about two inches from the uterus, so that when the uterus is brought into place it is within half an inch of the peritoneum. There is no possibility of its becoming adherent to the peritoneum. I have done that operation for four years. Dr. Cousins has operated in that way on several women in my own city. This operation is applicable not only to a retroverted uterus, but I have found it applicable to a number of cases of procidentia, at the same time repairing the pelvic floor. Dr. Cousins has had several pregnancies follow this operation in his own work, and so far without any complication at parturition. It is a most satisfactory operation. You get no adhesion of the peritoneum. You have every opportunity that you want to examine the pelvic organs. I believe if the gentlemen will try that operation, they will be satisfied with it.

Dr. Henry P. Newman.—I want to describe briefly the Barrett operation, which, in conjunction with my own, seems to cover the field of operative work on the round ligaments. We know the indications for the Alexander operation. Although an advocate of it, having been among the first to do it in this country and the first to do the high operation by the so-called direct method, I always insist upon the limitations of the procedure which debar it from cases where there are adhesions or any pelvic complications that would make opening of the abdomen necessary. In these latter cases Dr. Barrett makes a short incision in the median line, dissecting up the sheath of the rectus muscle on each side sufficiently for the introduction of this pair of forceps. The index finger is then introduced through the median abdominal incision for guidance in carrying the forceps beneath the fascia and through the muscles, at the outer side of the rectus muscle, down to the internal inguinal ring. The round ligament, encircled by a loop of silk, as Dr. Gordon has described, is grasped about two and a quarter or two and a half inches away from the uterus, the attached loop of thread drawn through the channel beneath the sheath of the rectus muscle brings the ligament over to its fellow of the opposite side. If sufficiently long the ligaments are then attached in the median line with catgut sutures. If too short, two or more sutures are used to attach them firmly on the posterior surface of the sheath

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of the rectus muscle. This is a simple procedure; it does not leave any loop of the round ligament within the pelvis to cause strangulated hernia. It brings the ligament out at the same point practically that it normally leaves the pelvis, and it is effectual in using that portion of the ligament which is strongest and has the most sustaining power. With this operation one has the advantage of being able to explore the abdominal viscera and to do any accessary work that may be necessary.

Where there are no indications for entering the abdomen I have seen no reason for modifying the method I presented to this society many years ago, calling it the *high* or *direct method* of shortening the round ligaments. I make the incision high up over the internal ring, securing the ligament where it is firm and resistant, easily found and secured without teasing of the surrounding tissues. The objection to making two incisions is compensated for by the advantages of ease and accuracy and expedition of the method which has given me uniform success; further, the high incision is well away from the pubis, groin (a possible source of infection) and converging muscular fibers at the external ring, injury to which is apt to cause pain and distress during the convalescence.

Dr. George H. Noble.—A just comparison cannot be made between the Alexander operation on the one hand and ligament suspension of the uterus on the other hand, for the field of the Alexander operation is very limited, it being applicable to only simple cases, or those where the pessary may be used with success. Other methods of suspension, particularly the round ligament and the utero-sacral ligament (separately or combined), are applicable to both simple and complicated cases. Of all the round ligament operations, I prefer my own, as it has advantages over the others. The Gilliam and Ferguson operations are modifications of mine, but do not possess all of its advantages. The round ligaments can be made to sustain the entire weight of the uterus; but in cases of prolapsus, or slipping forward of the cervix, such operations will not be entirely satisfactory unless the utero-sacral ligaments are shortened, for the cervix will swing forward, causing relaxation of the floor of the bladder and vesical irritation. Shortening of the utero-sacral ligaments relieves these difficulties, has a tendency to tilt the fundus forward, and

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participating in the support of the uterus, equalizes the intra-abdominal pressure upon all the uterine attachments. All the ligaments, and especially the round ligaments, have a certain amount of muscular tissue in them. It is a prolongation from the muscularis of the uterus. The ligaments participate in the process of involution after confinement. Consequently, there is a marked advantage in the fact that they shorten and shrink sufficiently to hold the uterus in place after parturition. False ligaments produced by peritoneal adhesions, such as are found in the Kelly operation, do not contract after confinement. These false ligaments, therefore, are useless after termination of pregnancy, and even may be harmful.

The round ligament operations more nearly approach nature than any method yet devised. In recapitulating, I will state that the Alexander operation is suitable only to the simplest forms of displacement without complication. The round ligament operation is applicable both to simple and complicated cases, after dealing with the complications in the pelvis. In cases of prolapsus, it should be accompanied by shortening of the utero-sacral ligaments. After the menopause, and when the appendages have been removed, the Kelly operation is permissible, but when the uterus is very much mutilated or badly diseased it is far better to do supravaginal hysterectomy.

Dr. Matthew D. Mann.—Like some of the Fellows who have spoken, I have done the Alexander operation many times and shall continue to do it because of the good results I have obtained by it. I have four or five different operations which I use, according to the case. For instance, the Alexander operation should not be done where the utero-sacral ligaments are relaxed. In properly selected, uncomplicated cases it answers every purpose.

Dr. Peterson has described an operation which can be done where there are adhesions. I have done a different operation which I have found satisfactory in a limited number of cases. Supposing we have a retroverted uterus which, under an anesthetic, cannot be got perfectly in place so as to make it stay there, and you are convinced that there are slight adhesions. If there is no history of gonorrhea, and no mass on either side of the uterus indicating serious trouble with the tubes or ovaries,

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I have found it satisfactory to open the cul de sac, put my finger in, break up adhesions, and then do an Alexander operation, closing the opening in the cul de sac by stitches before proceeding to the Alexander. In this way I have operated on six or eight such cases, and they have done well. Nobody would think of doing it where there is serious trouble with the tubes and ovaries. But for slight adhesions, and where there are no complications, I have found this operation to work very well.

PROF. M. DUHRSSEN.—This transverse incision was first recommended in Germany by Küstner, of Breslau, who worked in the direction very well shown in the second plate exhibited by Dr. Peterson. He pushed the skin apart and divided the linea alba. Pfannenstiel devised another operation which consisted of a transverse division of the rectus fascia, and, after this division of the rectus fascia, the fascia was pushed up, and in this manner it was possible to make visible the space between the recti muscles and to open the peritoneum longitudinally, and with this method, which I have employed in many instances with great success, we have the opportunity of making only one incision through the fascia. I agree with Dr. Edebohls that when it is possible to have only one incision through the fascia, it is more convenient to make it than to make three incisions. We have then the possibility which the Pfannenstiel method affords, namely, that we can do all work in the pelvis. I have extirpated the entire uterus through this incision in difficult cases of pyosalpinx, etc. I have also extirpated fibroid tumors and have removed the appendix. All of the organs were brought into view, as where a longitudinal incision is made in the linea alba. The advantage of this method consists further in protecting the space between the rectus muscle and the fascia of the recti, and it is not possible for a hernia to occur. This method of Pfannenstiel is comparatively easy of performance, and with it one can do abdominal work for retrodisplacement of the uterus, he can shorten the round ligaments and fix the round ligaments. But, gentlemen, I prefer for this class of cases vaginal celiotomy, and if it is practised in the extensive fashion in which I do it (and I have performed it in fifteen hundred and ninety-two cases, with a mortality of 2 per cent.), one will be continually surprised at the numerous and important diseases of the pelvic

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organs which it brings into view, and which are entirely missed in a bimanual examination, even with the patient anesthetized, and among these I may mention delicate perimetric threads wrapped around the ovary. Patients with such filaments are often designated as hysterical, as by touch no objective cause can be found for their pain. Also soft hydrosalpinx, small ovarian dermoids, beginning surface papillomata, and small degenerative cysts of the ovary. These last often cause severe menorrhagia, which can only be relieved by the removal of one ovary and the resection of the ovary.

In consideration of these discoveries, I am an opponent of the Alexander-Adams operation, as it does not bring the diseased pelvic organs into view. I would recommend for operators who are still opponents of the vagino-suspensory operation the shortening of the round ligaments by my method of anterior vaginal incision, as first recommended by Dr. Goffe in this country.

In spite of the many advantages of vaginal celiotomy, there are a great many prejudices against it. It is remarkable that these prejudices are so great in this country in which vaginal ovariotomy (by means of opening the posterior fornix) was discovered.

I have taken the liberty of bringing along a number of my publications on this subject, and I would ask any of my honored colleagues who have an interest in this matter to take copies of them. To be sure, it is only by direct observation of the operation that one is capable of dissipating these prejudices. It would be a great joy to me if, in a subsequent longer stay in America, I should be in a position to demonstrate the operation in any hospital where it was desired. I am sure that an exchange of professors between Germany and America in the domain of medicine would result in a more direct and extensive success than in other domains. It would not need to be an official exchange arranged by our governments.

I quite agree with Dr. Henrotin that the operator should select his cases for vaginal celiotomy carefully. The technique of vaginal celiotomy is no more difficult than that of ventral celiotomy. But the cases that are suitable for an abdominal operation are the best ones for an operator to gain practice in

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vaginal conservative work. I hope that the chapter written by Dr. Goffe on this subject in the text-book of Dr. Bovée, and perhaps also my operations performed in this country, will gain new friends for anterior vaginal celiotomy.

The splitting of a narrow vagina in these cases is of no importance. These wounds heal so beautifully that even the hymen is wholly restored.

In closing, I wish to express my thanks for the kindness with which my honored American colleagues have listened to my remarks, and also to emphasize how much I owe to the work of your famous countryman, Marion Sims, and his pupils. I would remind you, gentlemen, of the impetus given to our medical men by the visit to Europe of Marion Sims. His visit brought modern gynecology to the continent.

DR. PETERSON.—My purpose in bringing this technique before you was not to overthrow other methods of operating, because I know that would be useless. Every man has his own views and puts them into practice. I have found, in talking with operators throughout the country, that there was some doubt in regard to the feasibility of exposing the inguinal rings through a small transverse or longitudinal incison, and consequently I thought it might be of some interest to bring this subject up for discussion.

With reference to the point made by Dr. Edebohls as to not using a horizontal incision, but having it sweep upward or downward, I would reply that is unnecessary because the fat and tissues usually are easily pulled aside with retractors. A small horizontal incision two inches or two and a half inches in length, above the pubic bone, will suffice for these cases.

I am not an advocate of the Goldspohn operation of opening the internal inguinal rings and doing work through these apertures. I have tried this in a number of cases, and I find I cannot do the work as well as I can through a median incision.

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A THIRD SUCCESSFUL RENAL DECAPSULATION FOR PUERPERAL ECLAMPSIA.

By George M. Edebohls, M.D.,
New York.

As far as my knowledge goes, the two cases previously reported by the writer (*New York Medical Journal*, June 6, 1903, and *Boston Medical and Surgical Journal*, June 2, 1904), constitute our entire literature of the subject of renal decapsulation for puerperal eclampsia.

The history of the present case is as follows:

Case III.—On July 9, 1905, Dr. J. L. Friedler requested me to see with him a case of puerperal eclampsia. The patient, a heretofore healthy primipara of twenty, had menstruated last on October 15, 1904, and on July 8, 1905, was delivered of a living girl weighing 3900 grams. Labor was rapid and terminated without interference. The urine at last examination, one month prior to delivery, was found normal.

Early on the morning of the day following delivery the patient was taken with violent headache and dimness of vision, soon followed by almost complete blindness, convulsive twitchings and loss of consciousness. At 9 A.M. the first violent convulsion occurred; at 1 P.M. I saw the patient with Dr. Friedler. During our visit the fourth severe and prolonged convulsion occurred. The woman was blind and totally unconscious; pulse 110, full and soft; temperature moderately elevated.

The patient had last voided urine at 11 A.M. of the previous day, one hour after delivery. We drew by catheter 500 c.c. of urine, the total quantity secreted in the preceding

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twenty-six hours. The 500 c.c. contained 2.5 grams of urea and 1.5 grams of albumin in 20.47 grams of total solids. Microscopic examination showed innumerable casts of nearly all varieties: small and large hyaline, finely granular, finely fatty and epitheliated. Some red blood cells and leukocytes, and a few renal elements in a state of fatty degeneration, constituted the other abnormal ingredients.

At my suggestion the patient was transferred from her home to my private hospital, where involuntary fecal evacuations, almost continuous in character, and profound collapse were added to her other symptoms.

Decapsulation of both kidneys was performed, under chloroform narcosis, on July 9, 1905, at 4 P.M., seven severe convulsions and many minor ones having occurred since 9 A.M. The eighth severe convulsion took place on the operating table, but did not materially disturb the progress of the operation.

Both kidneys were found materially enlarged. The thickened capsules proper were firm in texture but invested the kidneys loosely and without tension. They were readily peeled off from the kidneys without the slightest loss of blood from the denuded surfaces of the organs. The kidneys presented the classical picture of cloudy swelling, with almost complete stagnation of circulation and widespread fatty changes of the tissues, giving the whole organ a dirty-yellow color. The operation required twenty-six minutes from first incision to completed closure of both wounds.

During the first twenty-four hours following operation there was but little change in the desolate condition of the patient. Two further convulsions, the last in the history of the case, occurred during the first eight hours; profound coma with involuntary evacuation of urine and feces continued.

Consciousness returned twenty-four hours after operation, having been suspended continuously since four hours pre-

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ceding decapsulation. The woman knew absolutely nothing of her transfer to hospital and of her operation, nor of anything that had since occurred. From this time on convalescence was uninterrupted, and the patient was discharged a well woman twenty-three days after operation. The only treatment adopted in addition to decapsulation consisted in the exhibition of chloroform during the convulsions.

During the first days following operation, owing to incontinence of both urine and feces, it proved impossible to collect the urine unmixed with bowel discharges. A catheter specimen of urine drawn on the third day contained 4 per cent. of urea. On the fourth day incontinence disappeared, and it became practicable to collect for analysis the entire quantity of urine passed in twenty-four hours.

The following table shows the total solids, albumin and urea contained in the urine of twenty-four hours on the day before and on various days after operation. Weight of patient, 55 kilograms.

The entire quantity of urine passed in twenty-four hours contained	Total solids; grams.	Albumin; grams.	Urea; grams.
On the day of operation, July 9, 1905.	20.47	1.5	2.5
On the fourth day after operation.	56.92	3.0	33.0
On the tenth day after operation.	123.02	1.1	39.65
On the thirteenth to the twenty-third days after operation; daily average.	45.75	0.2	21.6
On November 18, 1905.	61.79	None	26.52
On May 3, 1906.	55.36	None	18.48

The child succumbed to pertussis at the age of five weeks. The mother has enjoyed permanent good health ever since operation. She is at present (May, 1906) in the eighth month of her second pregnancy, which has thus far progressed without disturbance of any kind whatsoever.[1] Her urine remains perfectly normal, free of albumin and casts

[1] The patient was delivered of a healthy full-grown boy at term on June 20, 1906, by Dr. G. R. Pisek, who informs me that gestation, labor and the puerperium were without complication of any kind, the urine remaining continuously normal.

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The indication for renal decapsulation in the case narrated was given by the almost complete suspension of renal activity and the resultant life-menacing uremia. The one practically constant and invariable result in more than one hundred renal decapsulations for chronic nephritis which I have performed to date has been the immediate increase, often to an enormous degree, of the excretion of urea by the kidneys.

A brief outline of the histories of my two previous cases may not be out of place in connection with the case here recorded.

CASE I.—Primipara, aged twenty-three. Typhoid fever during the fourth month of pregnancy. Symptoms of nephritis first noted during the seventh month. Uremia and eclamptic seizures near the end of eighth month. Five severe convulsions within sixteen hours; forced delivery during fifth convulsion. Freedom from convulsions for forty-six hours after delivery. Then return of convulsions; six severe convulsions, not counting minor manifestations, occurring in eighteen hours. Decapsulation of both kidneys. No further convulsions and rapid restoration of complete health. Patient well and urine free of albumin and casts, at present writing, more than three years after operation.

CASE II.—Primipara, aged twenty years, pregnant, near term. Enormous edema, uremic coma and total blindness for three days, followed by convulsions. These were the symptoms when first seen, with cervix tightly closed, no labor pains, and fetal heart sounds distinct. Almost complete suppression of urine, the total amount passed in the last twenty-four hours containing only 1.44 grams of urea. Decapsulation of both kidneys of the undelivered woman. Immediate cessation of convulsions, twitching and delirium. Restoration of sight and re-establishment of flow of urine within twenty-four hours of operation. Two days later spontaneous inception of labor at term. Delivery of par-

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tially asphyxiated twins by forceps. First child revived; second child breathed a few times and died. Enormous output of urea, beginning twenty-four hours after decapsulation. Convalescence uneventful.

Mother and child alive and well today, two years and four months after operation. Urine of mother normal, free of albumin and casts.

In view of the facts demonstrated by the above observations, forced delivery can no longer be regarded as our final resource in the treatment of puerperal eclampsia of renal origin. The lives of two patients were saved by renal decapsulation after emptying of the uterus had failed to control the convulsions. In Case II renal decapsulation was performed upon the undelivered woman, promptly relieving the profound uremia, controlling the convulsions, and allowing the woman to carry to term. The important practical bearing of this fact upon the treatment of eclampsia occurring in the earlier months of pregnancy, before the child is viable, can scarcely be overestimated.

Within a few days following the reading of the above paper, I happened across a report by Pinard (*Bull. de l'Academie de Med. de Paris*, 1906, LV, 489–497, Session of April 3, 1906) upon a memoir of Chambrelent and Pousson entitled: "Sur la decapsulation renale et la nephrotomie dans le traitement des formes graves de l'eclampsie." As I am unable to locate the original publication, I quote from Pinard the following abstract of the case reported:

CASE OF CHAMBRELENT AND POUSSON. Primipara, aged twenty-one years; eclamptic seizures a few hours after the beginning of labor. Four attacks before delivery. Forced delivery, after manual dilatation of cervix, sixteen hours after beginning of labor. Half an hour after delivery three severe attacks of eclampsia followed by coma. Almost complete anuria; only 200 c.c. of urine voided in the forty hours intervening between the commencement of labor

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and decapsulation. Decapsulation of both kidneys and right nephrotomy, twenty-four hours after delivery. Flow of urine re-established at once. Coma disappeared on third day. Complete recovery.

DISCUSSION.

DR. J. CLIFTON EDGAR.—The pathology, etiology, and treatment of eclampsia are today in such a chaotic state that it would seem any suggestion along the line of treatment of eclampsia, or any port in a storm, would be valuable in the present status of our knowledge, and if the port Dr. Edebohls suggests is the one to steer for, I am sure all of us will be grateful to him for pointing it out.

This case the doctor reported is undoubtedly one of the nephritic cases. As I remarked day before yesterday, in speaking of eclampsia, we see two varieties clinically. We see a variety which undoubtedly depends upon a toxemia which is peculiar to pregnancy, which we can designate as hepatic eclampsia, because in autopsies we invariably find hepatic lesions, areas of necrosis. And then we have the other variety, in which class undoubtedly Dr. Edebohls' case falls, namely, the nephritic variety of eclampsia. As I have stated before, the mortality in the first variety, the toxemic variety, is almost invariably high, nearly 100 per cent. On the other hand, the mortality in the nephritic variety under most any treatment is inclined to be good, and especially in postpartum variety, and I believe Dr. Edebohls' case falls under the postpartum variety.

Dr. Greene, of Boston, some years ago collected all the cases of eclampsia in the Boston Lying-in Hospital, and published the statistics, and it was found that antepartum eclampsia had the highest mortality. Next, there was a comparatively low mortality, which included all varieties occurring postpartum.

So strong is the belief that there are two varieties of eclampsia, that is, the hepatic as we have called it, and the nephritic, that in our maternity service, when a case of eclampsia is brought in, the internes immediately speculate among themselves as

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to which variety of eclampsia we have to deal with. The question arises: Is it the toxemic hepatic or nephritic variety? and if they decide that the patient has the nephritic variety, and if the uterus is emptied without too much shock being produced, a rather good prognosis is looked for.

A most interesting paper was published by Zweifel early in this spring or late in the winter, in which he collected a large number of cases of eclampsia, and if statistics prove anything, surely his statistics prove that the more vigorous the interference the higher the mortality in all cases of eclampsia. If the uterus can be emptied by gentle means, the bowel irrigated continuously, and the partial or total suppression of urine overcome, and the skin, kidneys and liver stimulated, these cases will do well, but the mortality is directly proportionate to the vigor with which the case is treated.

Another interesting collection of cases on this point was published three weeks ago by Dr. Rider, the present resident physician of the Sloane Maternity Hospital, and his statistics, independent of those of Zweifel, were along the same lines. He found, in taking all cases in the Sloane Maternity, that the mortality was directly proportionate to the strenuousness of the operation or method of treatment that was undertaken for relief, and the best results were obtained by the emptying of the uterus, waiting if necessary, if the cervix would not allow it within reasonable time, resorting to bowel irrigation, with stimulation of the functions of the skin, liver and kidneys.

DR. M. DUHRSSEN.—I should like to emphasize the point that Zweifel was the first to express his views concerning this method of treating cases of eclampsia by deep incisions according to my method, and he reported several hundred cases in which the mortality from this procedure was much lower than that from the former treatment of eclampsia. Permit me to say, that vaginal Cesarean section is a rapid method of emptying the uterus in cases of eclampsia. This is shown by the statistics of Veit and Bumm, who collected seventy-three cases of eclampsia in all of which delivery was effected by vaginal Cesarean section, with only two deaths.

I believe Dr. Edebohls has discovered a method which is of great advantage in cases in which eclampsia occurs after

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delivery, and if I encounter such a case in my experience, with those symptoms, I shall try this method in Germany, and I hope the results will substantiate it.

DR. EDEBOHLS.—One or two points have been brought out in the discussion which call for remark. The first is connected with the fact that in three of the four cases reported, delivery of the child had been effected and yet the convulsions remained uncontrolled. All these women were in danger of their lives from uremic convulsions, and the supreme remedy of emptying the uterus was no longer at our command. These three women, provided you will accept my opinion and that of the attending physicians, would in all human probability have died without operation. The salient point is that we still have a measure or remedy for the control of puerperal uremic convulsions after emptying the uterus has failed, and that remedy is renal decapsulation.

As regards the mortality of puerperal eclampsia, Dr. Edgar has given us some statistics of these cases as they arise before and after labor. These statistics vary and differ absolutely from those which are reported from all over the world, and which are generally accepted by the profession. In one hundred and fifty cases recently reported from the New York Lying-in Hospital, the total mortality from all cases, whether the eclampsia occurred before, during or after delivery, was 36 per cent.

Dr. Edgar made a point which struck me as susceptible of a double interpretation when he said it has been the experience of one or two statisticians that the cases which have been the most actively, vigorously, and strenuously treated have been those in which the mortality has been the highest. The mortality may not have been due to the strenuous treatment, but to the severity of the cases which required such strenuous treatment.

Professor Dührssen's criticisms relate to the method of delivery. I did not intend to bring that into the discussion at all; it was my desire to bring before you merely the method of treatment of puerperal eclampsia and not the question of choice of method of forced delivery.

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REPORT OF TWO CASES OF HYPERNEPHROMA RENIS. WITH REMARKS.

By J. Wesley Bovée, M.D.,
Washington, D. C.

A tumor springing from adrenal tissue, whether in the suprarenal gland or displaced, is called a hypernephroma.

Interest in the peculiar adrenal tumor called hypernephroma is shared by both operating surgeons and pathologists. And yet one in talking with confrères about this growth is impressed with the lack of knowledge concerning it. A few surgeons, operating every day, confessed to me they had never heard of such a tumor. This statement, when taken with the fact that hypernephroma is the commonest form of renal neoplasm, seems remarkably extravagant. It has not been long since its rarity was attested by all observers who had been sufficiently fortunate to study hypernephroma. Today we know it is the commonest form of kidney tumor. This is an important fact when we consider that there is no organ in the human body in which new-growths are more numerous or more variegated, even when metastatic or secondary ones are excluded. The reason for this disparity between the earlier ideas and our present knowledge concerning these tumors is that kidney tumors have been more carefully studied and many formerly thought to have sprung from kidney structure have since been found to have originated from islands of suprarenal tissue included in the kidney, the so-called suprarenal "rests." Most of the tumors in or connected with the kidney are now known to have this origin. For our knowledge of this class

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of tumors we are indebted to Grawitz, who, in 1883, first indicated that certain of the tumors of the kidney that had not been well understood really came from suprarenal "rests" in the kidney and not from kidney structure at all. He gave them the name of "strumæ suprarenales lipomatodes aberratæ." In this class he placed lipoma, angioma cavernosum renis, myxolipoma telangiectodes in capsulatum renis utrinsque, myxoma lipomatodes renis and myxoma renis, as well as Virchow's lipomatoid new-growth, the lipoma intraperinéphrétique of Klebs and Sabourin, and the glandular carcinoma of Sturm. He afterward extended this class to include the adenoma renalis alveolaris of Weichselbaum and Greenish. He further demonstrated that, though these growths might at first be benign, later they were apt to be malignant. Many pathologists proceeded with little delay to confirm Grawitz's statement. Sudeck, however, absolutely denied the reliability of Grawitz's statements, but Lubarsch and Askanazy so strongly supported Grawitz that his views have been accepted. The opposition to the opinion of Grawitz is composed of observers who believe either that these tumors spring from the mucosa of the uriniferous tubules, and those who regard them as of endothelial origin from proliferation of the perithelium of the blood-vessels or the endothelium of the perivascular lymph spaces.

A very exhaustive and highly scientific paper on the subject of hypernephroma was published by A. O. J. Kelly in the *Philadelphia Medical Journal,* 1898, ii., 223. The bibliography of that paper is large and furnishes one with references practically covering the literature of the subject down to the time of its writing. Moreover, it contains a report of eleven unpublished cases that have been carefully studied. It is a mine of information on the subject of hypernephroma and I commend it to students of this subject.

General Characteristics. This class of tumors is usually noticed clinically in advanced life when they have

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assumed a considerable size and have caused trouble that demanded relief. This fact led to the belief that they were always malignant. Studied from the standpoints of anatomy and pathology they are found in a benign state especially in early life and even after the age of fifty years has passed. They are found accidentally on the necropsy table in routine work and in such cases are usually benign in character. Hansemann says the majority of the smaller variety remain stationary. It is known they may remain thus for years and then take on malignant character.

That misplacement or inclusion of tissue elements often occurs in the human body is well attested. Particularly is this peculiarity noted in the deposits of the suprarenal gland tissue at various points along the genito-urinary tract. Such inclusions or "rests" have been found in the solar and renal plexus; under the capsule of and in the substance of the kidney; in the perinephric tissue; in the broad ligament; along the spermatic vessels; in the testicle and ovary; in the liver, the mesentery, and in the inguinal canal. Holmes says such rests are found in 90 per cent. of all necropsies. This can be attributed to the juxtaposition of the suprarenals to the mesonephros and internal sexual organs in embryological development. The male sex seems most subject to this growth though my two cases were in women. Bierring says "Although it is true that we cannot, on microscopic examination, differentiate between the benign and the malignant, yet it is also true that some are far more malignant than others." Those arising from the adrenal itself, are, as a rule, quite well circumscribed and separated from the kidney by a well-defined connective-tissue capsule, whereas those which originate within the kidney present somewhat more malignant manifestations. Ohlmacher reports two cases of considerable size that were well encapsulated, had no infiltrating tendencies, and did not give rise to metastatic formations. They might be classed as benign. Others have marked

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infiltrating tendency or metastatic deposits and alarming symptoms, as pain and hematuria, fever, etc.

Classification. The varying structural appearance noted in these tumors has led to attempts at classification of them. While not fully satisfactory yet a classification of them into alveolar and cortical is probably the best. This very likely depends largely upon whether they spring from the suprarenal gland enclosed by the kidney capsule or from the islands of adrenal tissue surrounded by renal tissue.

Gross Anatomy and Pathology. These growths are usually flesh-colored or a beautiful canary yellow. And it is not uncommon to find in the larger ones softened and broken-down portions mixed with blood clots, often in concentric layers, indicative of repeated hemorrhages. These tumors are usually soft and kidney-shaped, though they may be rounded, and they vary in size from that of a pea to six, eight, or ten inches in diameter. They seem to be distinct from the kidney, as a rule. But infiltration lessens the distinctive differential outline of them. On cut section of the larger specimens we find areas of softening and necrosis. The large masses of coagulated blood are probably due to the vascular character of them and the lack of connective tissue support to the vessels. The stroma consists of dense connective tissue, however, in spots, and of a delicate network of capillaries mingled with tumor cells that are large and round or polygonal. They are usually arranged in rows and are rich in fat and glycogen. This is said to be the picture of the cortical variety. When the medullary portion is more particularly represented we find the alveolar form, in which the spaces are filled with large polygonal medullary cells. In some specimens both varieties are found.

Mode of Extension. When infiltration occurs it is into the renal tissue, the pelvis, the renal vein and even into the vena cava. They even extend along the ureteral mucosa to the bladder. Probably they rarely if ever extend along the

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lymphatics, notwithstanding the belief of some pathologists, as previously mentioned, that they originate from the endothelium of the lymph spaces. It seems more than likely, however, that like other forms of infiltrating growths the lymphatics perform a share of the work. Bierring points out that these cells proliferating so rapidly would naturally extend along lines of least resistance—the lymph spaces, and if such be true we should expect the lymph channels to act as avenues of extension. In one of his cases there was marked infiltration of the retroperitoneal glands.

METASTASES. Occur in various parts of the body. The liver is a very common site for such deposits. Le Count reports a case in which a primary tumor having the size of a hen's egg involved the lower pole of the right kidney. By extension it filled the pelvis and the bones on the right side followed by a pathologic fracture of the right ilium. It also extended through the first sacral vertebra, which led to a tumor formation of the right buttock with ulceration and gangrene. Metastases were also found in the left iliac lymph glands and the left femur, the latter resulting in a pathologic fracture of that bone about three months before death. Implantations along the urinary tract and in the peritoneal cavity are frequently met with.

SECONDARY MANIFESTATIONS. These have practically the same formation and appearance as in the original tumor, the color, hemorrhagic and necrotic areas being about the same.

SYMPTOMATOLOGY. No doubt these tumors are present for years in the benign form without ever giving rise to symptoms. Especially is this true in the very small growths, though I am quite willing to admit that a more extended study may necessitate a modification of this statement. In many the patients have noticed a kidney tumor present for years during which they enjoyed good health. Suddenly they have been stricken with localized pain, sudden

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increase in size of tumor, hematuria, fever, chills and prostration, with loss of flesh and cachexia, to be followed by death or relief by early surgical intervention. Urinary changes are not of constant diagnostic value as oftimes they are absent. This is particularly the case in the benign form. When infiltration occurs, papillary excrescences may develop in the uriniferous tubules or pelvis and hemorrhage occur. In one of my cases pus and tube casts were found in abundance. In the later stages, when metastases have occurred, the symptoms will vary according to the tissue involved.

DIAGNOSIS. This is never positive. We have to rely upon the presence of a renal tumor, perhaps of years' duration and apparently harmless in the case of the benign form. This must be differentiated from renal tuberculosis or calculous pyonephrosis and renal calculi. In the malignant form as a rule we have the history of a benign tumor for years and suddenly localized pain, chill, fever, hematuria, increase in size of tumor, abnormal urinary ingredients, cachexia and loss of weight. These again must not be confounded with tuberculosis, calculi, and malignant true renal tumors. We have also to recollect that most renal tumors are of this variety. Much has been written of the importance of the presence of glycogen in the tumor and of its diagnostic value. Grawitz spoke of this, Kelly lays some stress upon it and Crafton has been working along this line. Following the suggestion of Kelly that hypernephromas should show the characteristics, chemically, of the suprarenal gland, he experimented and states his belief that hypernephroma may be differentiated from other renal tumors. He found that a watery solution of the suprarenal gland possesses the following properties: (1) Injected into the body of a dog or a rabbit it produces glycosuria. (2) It possesses the power of converting starch into dextrose and maltose and this power of the extract is lost on boiling. (3) It causes the blue color produced by iodine in a starch solution to disappear. He

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found hypernephromas acted similarly to suprarenal tissue and believes this point alone is sufficient for differentiation of hypernephroma. It is of no value before operation but rather assists the pathologist in his diagnosis.

PROGNOSIS. The prognos is in the case of benign tumor is not so bad, particularly if nephrectomy is done early. In the malignant form the outcome becomes more hazardous. In many cases, particularly if metastases have occurred, we can not hope for anything better than a fatal ending.

TREATMENT. Realizing that hypernephroma is by far the most common form of renal tumor, that the symptoms are so unreliable for differentiation between the benign and early stages of malignancy and that the advanced malignant tumor is so fatal, one can scarcely avoid recommending extirpation of every renal tumor, especially if of long duration. It goes without saying, the malignant form if seen early more peremptorily demands extirpation.

As the *bête noir* of malignant tumors everywhere is too late operation, to be consistent with the usual treatment of malignant growths we must hail with gladness an opportunity to remove a tumor in a benign state rather than to accept additional dangers, both as to complications of operation and of ultimate eradication, that necessarily attend operation for malignant growths.

I must offer my protest against the transperitoneal route for extirpation. The danger of infection of the peritoneum, either by pieces of the tumor or pyogenic organisms that may be present, is certainly apparent. This necessitates the employment of the extraperitoneal route. The most rapid and useful incision is the transverse one. It is quickly made and furnishes a wound that is easily drained without interference with prompt union of the upper or anterior portion of it. The least possible amount of manipulation of the tumor in its removal is recommended, and with reason, lest fragments of it be forced into the renal vein. I would also caution

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against rupture or puncture of the growth, as one is tempted to do on account of its softness and extreme size.

The two cases I have to report in this paper are as follows:

CASE I. *Nephrotomy followed by incomplete nephroureterectomy for pyonephrosis, adrenal tumor, and pyo-ureter; extraperitoneal operation; recovery.* Mrs. F. S., white, aged thirty-eight years, was seen with Dr. Roman, of my city, February 16, 1900. She had had five children, the last of which having been born seventeen days previously. The preceding autumn she had had chills and fever, which did not yield to the administration of quinine, but continued to time of labor. With the beginning of the chills she noticed a "tumor" to the right of the womb, which was very painful and prevented her from getting her usual sleep. During labor Dr. Roman had discovered the mass in the region of the right kidney and her temperature to be 102° F. The labor had been normal, but the fever had continued raging from 100° to 104° F. Believing he was dealing with a suppurating kidney, I was called. At this visit I found a small, emaciated woman weighing about eighty pounds, having a temperature of 102° F. and a pulse of 130; her skin was very dry and tongue furred. A mass of about the size of an average sized infant's head was noticeable in the region of the right kidney. Nephrotomy was advised, and she was sent to Columbia Hospital for Women for that purpose. The urinalysis made the following day showed as follows: color, brownish-yellow; heavy sediment; acid reaction; specific gravity, 1022; a trace of albumin was present; urea seven grains to the ounce; pus cells abundant; no casts or tubercle bacilli were found. No ureteral catheterism was resorted to, as the patient was very ill, and a nephrotomy at least seemed urgently necessary, which was done on the nineteenth, opening seven pus pockets in the kidney and cutting away a piece of the organ for microscopic examination. The operation required but a few minutes and was done during extreme stimulation, yet death

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was barely averted. The pulse ranged from 136 to 160 at the time, and nothing more than emptying the pus collections was to be considered. Destruction of the kidney structure seemed universal. The temperature returned to normal, the pulse dropped to less than 100, and she improved materially, though pus continued to come freely from the loin wound. The day after nephrotomy the urinalysis report was: quantity for twenty-four hours, twenty-one and one-half ounces; reaction, acid; 2 per cent. of albumin present; no casts of blood, but pus present. The quantity gradually increased to more than thirty ounces, having occasionally an alkaline reaction and nearly always a trace of albumin and pus. On March 10, 1901, the temperature and pulse rapidly rose to a dangerous point, though the wound was discharging large quantities of pus. Two days later I removed the kidney and ureter to the middle of the pelvic portion. The kidney was found to be very much smaller and contained a few pus pockets. No urine had leaked through the drainage tract since the nephrotomy. About the middle of the pelvic portion of the ureter was found a mulberry calculus with diameters varying from three-eighths to five-eighths of an inch, completely blocking its lumen. The peritoneum was slightly opened in two places during removal of the ureter and they were immediately closed with running catgut. Daily examinations of the urine from the time of this operation to April 4th showed a gradual decrease in the abnormal elements and a complete absence of them at the time of her leaving the hospital, April 6, 1901.

Dr. James Carroll, U. S. A., examined the specimens removed and reported on them as follows: "The kidney is the seat of a chronic interstitial inflammation, probably a pressure nephritis. The pelvis is lined by a wall of granulation tissue. In the cortical substance beneath the capsule and in the deeper structures there are sharply circumscribed and diffuse areas composed of large polygonal epithelial cells

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whose protoplasm is filled with fine fat droplets. They are usually arranged in single rows, separated by a delicate stroma, and appear to be aberrant adrenal growths originating from embryonal remnants. In the gross specimen these areas were sharply circumscribed and of a distinctly yellow color. The kidney is dotted with yellow masses of new-growths and the same growth appears on the capsule. The ureter was much thickened and dilated above the site of the calculus."

CASE II.—*Renal hypernephroma, acute symptoms; nephrectomy; recovery.* Mrs. N., white, aged fifty-three years, wife of a naval officer, was seen February 4, 1906, with Drs. E. W. Reisinger and W. S. Dixon, U. S. N. She had had one child that had grown to maturity and no other pregnancies. Her mother was said to have had a malignant liver neoplasm. The patient could remember that as far back as five years she had noticed a permanent tumor just below the liver in the right side of the abdomen. She had enjoyed excellent health notwithstanding the presence of this growth. About February 1, she had been seized by severe pain in the region of the tumor mentioned accompanied by abdominal distension and nausea. Morphine in large doses hypodermatically was required for the pain. When I saw her she was suffering little pain but was exquisitely tender in the right upper quadrant of the abdomen and marked tympanites. An irregularly globular tumor having a transverse diameter of about five inches was noticed bulging forward the anterior abdominal wall just below the ribs and about four inches to the right of the median line. If was semi-fluctuant and tender and did not move with the diaphragm in respiration. Her temperature was 101° F. and pulse 112. The following day a specimen of her urine was sent to the Naval Museum of Hygiene and the examination of it was reported by Surgeon T. A. Berryhill as follows: quantity, 250 c.c.; color, high; reaction, acid; specific gravity, 1013;

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albumin, 4 per cent. by volume; sugar, none; urea, 1.3 per cent. There are thousands of casts in each microscopic field, granular casts, renal cells and blood.

February 9, 1906, I again saw Mrs. N. with the physicians mentioned. The localized tenderness was lessened, the abdomen was less distended, but fever and high pulse rate were present. The patient was in such a state of exhaustion and anxiety that urinary segregation was deemed inadvisable. She was therefore taken to the Georgetown University Hospital, February 11, and the following day operated upon. The temperature was 103.8° F. and the pulse rate 102.

A transverse incision directly over the tumor was made and the mass removed extraperitoneally. Through the inner end of the wound the peritoneum was opened and the liver and gall-bladder palpated. Nothing abnormal was found with either and the peritoneum was immediately closed. The large renal mass broke upon manipulation and some soft, thick, grimy material having a dark-brown color escaped. The vessels and ureter were clamped under the mass by the sense of touch and severed. Gauze packing was employed and the upper three-fourths of the incision closed by buried absorbable suture material. The temperature after operation did not exceed 99.4° F. and the pulse rate was correspondingly reduced. After February 17 the temperature remained normal. During the first twenty-four hours after operation the quantity of urine excreted was forty-five and one-half ounces and for the second similar period sixty-eight ounces. It varied from twenty-five to seventy-four ounces a day for the next thirteen days. Surgeon Berryhill reported, February 26, that the urine contained numerous hyaline and fine granular casts, slightly fatty and renal cells adherent.; a few waxy casts, squamous and a few renal cells and leukocytes; a a little mucus and triple phosphates.

On March 10 and 21, he reports specific gravity 1011;

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albumin, a slight trace; urea, 0.8 per cent.; many squamous cells and occasional leukocytes and a little mucus. She recovered and on May 17 was in excellent health and spirits.

The specimen herewith shown was critically examined at the Army Medical Museum by Dr. James Carroll, curator, and his assistants, Dr. Healy and Mr. John S. Neate, whose report upon it is as follows:

This specimen consists of the right kidney partially enveloped in a new-growth irregularly ovoid in shape and somewhat distorted, from compression in a vessel too small to hold it when first removed, giving it a rather more cylindrical appearance than originally belonged to it.

It weighs 860 gms., is about 16 cm. in length, 13 cm. in breadth and 31 cm. in circumference.

In general its surface is smooth, of a dark, reddish-brown color, mottled with yellowish areas where fatty tissue predominates. By shallow fissures it is longitudinally divided into unequal lobes. The firmer kidney sustance, which can be easily differentiated from the tumor, appeared to comprise about one-third of the mass before dissection was attempted. The neoplasm, darker in color and of a soft consistency, exhibits about its centre and corresponding to its most compressible portion an irregular fracture of the capsule, exposing a cavity of the size of a hen's egg, partially filled with spongy, hemorrhagic, necrotic detritus. This rent was the unavoidable result of manipulation during the operation.

The whole mass is enclosed in a distinct capsule continuous with that of the kidney, but over the new-growth is of greater thickness. When received at the laboratory it was at once pronounced by several observers as a sarcoma. Dr. Carroll, U. S. A., the curator of the museum, however, stated that it was most probably a "tumor of aberrent adrenal origin," which diagnosis subsequently proved to be correct.

After fixation in "Kaiserling's solution" the kidney was

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partially dissected away from the tumor, when it was found that the kidney, which presented so much surface externally, was but a mere shell, varying in thickness from three-fourths inch at the poles to a feather edge where the capsule became continuous with that of the tumor.

The new-growth, now exposed, has a more rounded and symmetrical appearance, resting in the pelvis of the kidney to which its capsule is attached by a number of fibrous bands running in the direction of the pyramids, a few of which can be clearly seen in the thin shell before noted. The greater portion of the kidney substance has been engulfed by the neoplasm or pressed outward as a cap, and from its position suggesting strongly that the original point of origin of the tumor was somewhere near the hilum.

Unfortunately neither the ureter nor renal vessels could be located without so much dissection as would have destroyed the value of the specimen for exhibition.

On section through the centre of the new-growth it presents a curiously mottled appearance, characteristic of large tumors of this class, varying in color from a light yellow to a dark brownish-red, and is enclosed by a distinct fibrous capsule about one-eighth inch in thickness, from which several fibrous trabeculæ tend toward the centre, and around which are loosely grouped light yellow, roundish nodules of a cheesy consistency varying in size from that of a pea to a hazelnut, and many of them presenting gelatinoid or mucoid centres. Between these nodules are varicolored, friable masses of necrosed tissue and cavities filled with granular debris and coagulated blood.

Near the rent in the capsule, before mentioned, this yellowish tumor growth appears upon the surface, having penetrated the capsule, the edges of which are clearly seen to be everted.

Several sections were taken from the growth directly adjacent to the kidney and from the necrotic and hemorrhagic

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portions further removed from that organ, embedded in celloidin, cut and stained with hematoxylon and eosin.

Microscopic Examination. Sections under the microscope, whether from the well-preserved or degenerated, portion of the tumor, show masses of epithelial-like cells whose appearance and grouping more closely resemble the parenchymatous cells of the cortex of the normal suprarenal body than any other tissue or neoplasm common to the human body.

The kidney structure adjacent to the tumor shows the effects of atrophy and pressure, a decided connective tissue increase, beneath the capsule large areas of round-cell infiltration, atrophy of the tubules and fibrous transformation of the glomeruli. The tubular epithelium is granular and desquamating and some tubules contain casts. The parenchymatous and fibroid changes are most noticeable in the vicinity of the tumor.

The capsule of the tumor, as shown by one of the sections, is made up of a condensation of the connective tissue of the kidney, consisting of fibrous strands enclosing masses of round cells, the vestiges of tubules and fibroid glomeruli compressed into more or less irregularly defined layers. From this connective tissue envelope fibrous trabeculæ penetrate the neoplasm conveying bloodvessels, and which break up into numerous capillaries and fine fibrillæ, subdividing the tumor into irregular alveoli lined with cells of epithelial type. These alveoli formed by delicate fibrous reticulum or capillaries vary much in size and shape, some representing long thin columns two or three cells in width, or wider irregular spaces filled with many detached cells, but in general preserving atypically the arrangement of the alveoli of the cortex of the adrenal body. The cells lining these spaces of the tumor are cuboidal, polygonal or irregular, according to location. At the margins of the spaces where they rest directly on the capillaries, which frequently show as mere threads of endo-

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thelial cells, they are cuboidal or columnar and with a semblance of regularity in arrangement, becoming polyhedral or quite irregular in the centres of the masses; the cytoplasm of these cells, usually rather scant stains with varying intensity, occasionally exhibiting vacuoles or fat-droplets, less sharply defined, however, than is usual in similar types of cells where infiltrated with fat.

In the degenerated portion of the tumor the protoplasm of these cells exhibits more markedly a reticular or vacuolated structure, suggesting fatty changes. The nuclei are large and stain well; in some nucleoli can be seen, and giant cells, while not numerous, are present.

Nowhere in the sections examined is there any suggestion of the tubular arrangement characteristic of the kidney or adenomata.

Marked degenerative changes are a prominent feature of this tumor. In the sections removed from the necrotic areas the tumor cells can be made out as mere outlines or shadows with faintly stained nuclei invaded by clouds of polymorphonuclear leukocytes, the nuclei of many of which are fragmented. In other areas extensive hemorrhages have occurred, imparting to the growth that varicolored appearance so frequently referred to.

The cellular degeneration and hemorrhages bear, no doubt, a direct relation to the arrangement of the tumor cells and the bloodvessels with which they are in direct contact, and bring to the fore the absorbing question of metastasis and malignancy. Upon this subject, in view of the confused terminology, I may be allowed to refer briefly to the opinion of recent investigators of these adrenal tumors. In discussing the differential diagnosis of benign and malignant hypernephroma, Dr. Peuckert says:[1] "The arrangement of the tumor cells corresponds more or less with that of the suprarenal

[1] The American Journal of Urology, vol. ii., Nos. 2 and 3.

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body, but nevertheless an atypical condition is often found." " . . . Usually the cells, especially those of the more recent portion in the outer part of the tumor, lie in two parallel rows without any intercellular substance. In other parts of the growth the cells are arranged in clusters which are bordered by capillaries. However, contrary to what is found in benign growths, he spaces between the neighboring capillaries are much larger and irregular. The first row of cells is fairly perpendicular to the capillaries, but the cells in the intermediate spaces are usually placed irregularly." " . . . . That it is difficult to distinguish between benign and malignant tumors of the suprarenal body has been made evident by Hanseman, and he says: 'Every hypernephroma of the kidney is a malignant tumor. Just as carcinoma occurs, which may exist for years without taking on a rapid growth or producing metastases, so also relatively latent periods exist in the life of the hypernephroma. Between the hypernephroma arising in the kidney as an isolated tumor reaching the size of a hazelnut and one which has produced hundreds of metastases, I am unable to find any radical histologic difference. One cannot appreciate the danger of its malignancy by merely examining a single section of the tumor.'"

Among the arguments advanced by Grawitz for the diagnosis of malignant tumors originating from aberrant germs of the suprarenal body in the kidney are the following: "The cell formation of the tumor typically differs from the shape of the epithelium of the urinary canals. The tumors are always encapsulated. The arrangement of the cells and very scanty stroma, which may be almost absent, is characteristic of the suprarenal body. The hemorrhages and resulting retrogressive metamorphoses should also be included among the characteristic signs of malignant growths, and above all their tendency toward progressive development and the formation of metastases."

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Dr. Ellis,[1] writing on the pathology of hypernephroma, states: "Small hypernephromas, giving rise to no symptoms and found only at autopsy, are as benign as the adrenal rests from which they spring. It is just as evident that the larger growths, which extensively destroy surrounding tissue by pressure or by actually breaking through the capsule, possess malignant attributes. This attains its highest degree in the formation of metastatic growths in other tissues of the body. On this basis all hypernephromas may be regarded as potentially malignant.

DISCUSSION.

Dr. George M. Edebohls.—I should like to call attention to the comparative frequency with which aberrant normal suprarenal tissue is found. As illustrating this frequency, I may state that, in performing renal decapsulation, small pieces of tissue sometimes adhere to the inner aspect of the capsule in stripping it off. I have made it a practice to have these small pieces of tissue examined microscopically, and in three cases the pathologist has reported that the pieces of tissue adherent to the inside of the capsule proper of the kidney were pieces of aberrant suprarenal tissue. This frequency of aberrant normal suprarenal capsule tissue may possibly explain the frequency of hypernephromata.

Dr. William M. Polk.—I am loth to let this report go by without further discussion, notwithstanding the fact that I have no clinical experience to add to the paper of Dr. Bovée. But there are two points in the paper that I think the Society would do well to consider, with a view to emphasis, and the first is the advisability of early exploration of all these cases of doubtful kidney growth. The risk involved in the operation of exploration is, as you know, slight, and the early removal of these growths, when found to be of the kind Dr. Bovée has described, is a matter of very great importance to the future of the individual.

[1] Hypernephroma, American Medicine, December 17, 1904.

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I also wish to thank him for the stress laid on the great advantages to be obtained from the transverse incision; the marked ease with which the entire kidney region, including the ureter, extending practically from the lower limits of the kidney to the upper border of the pelvis, can be exposed without any great shock to the patient, and the enormous advantages gained from this exploration, alone justify the use of that incision in preference to the longitudinal one; and, of course, as Dr. Bovée has stated, the risk not only of shock at the time, but subsequent suppuration, is no greater in this than when we make the ordinary oblique or vertical incision.

DR. BOVEE.—Of these two cases, the first was a woman, an interesting case in which, two weeks before I saw her, a doctor had delivered her. He had fortunately taken the woman's temperature for three days before delivery, and found she had fever ranging from 101° to 103°, so that he felt he could exclude puerperal sepsis. He did not discover a tumor in the region of the kidney, which, when I saw her, fourteen days after delivery, was clearly a case of pyonephrosis. I advised operation, which was consented to and performed the following day at the hospital. Nephrotomy was done, allowing the escape of pus; but after two weeks she seemed to be lowering in vitality instead of building up, and I felt it was necessary to make further exploration, and this time I removed the kidney, which consisted of a large mass of pus pockets, with a stone in the ureter near the brim of the pelvis, the iliac crest. I removed the kidney, containing several adrenal rests and a growth of considerable size, with a mulberry calculus, and she made a good recovery. That was about six or seven years ago.

The other case was one that occurred this past winter, in which the mass was very large. It is probable that the woman's first symptoms referable to the tumor were due to the massage which she had received. A woman gave her massage one day, and shortly after that she began to have pain in the kidney region. The tumor increased in size. It is of malignant type, and probably her symptoms date from the friction of the massage at that time. The tumor was removed and the woman made a good recovery and is now in perfect health. I saw her day before yesterday, and she was very jubilant. But with a growth

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of that size in the kidney, I am inclined to think she is not free from danger, and I am fearful she will have trouble in the future.

I regret very much that there has not been more discussion, because this is a subject in which I am much interested, and I think we should all give a good deal more attention to the study of these tumors. It is the most common form of renal tumors, and they spring from the aberrant pieces of suprarenal tissue which we find within the kidney structure, or partly the kidney structure and partly the renal capsule.

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INTRAMURAL ABSCESS OF THE PUERPERAL UTERUS.

By George H. Noble, M.D.,
Atlanta, Ga.

With the object of eliminating misleading discussion I will state that it is not the purpose of this paper to consider the subject of puerperal infection, but to deal with one of the results, that is, intramural abscess of the uterus.

Abscess occurs at the end of the second week or a little later, after the most acute symptoms of puerperal sepsis have passed. The cavity of the uterus, therefore, is apparently free from serious infection or debris. The temperature curve is septic and devoid of chills, unless complicated with thrombophlebitis.

When the appendages are not involved, pelvic examination is negative, except in thin or relaxed abdominal walls. When the abscess is single, a rounded, slightly flattened outline may be felt upon the surface of the uterus, which to the sense of touch feels something like a small, deeply seated fibroid tumor, but is more elastic and the outlines are not so sharply marked. When the Fallopian tubes and cavity of the uterus are not infected, and the uterus is firm in texture, diagnosis is not likely to be confused with other diseased conditions except thrombophlebitis.

The latter is marked by chills, sharp rise in temperature, and rapid decline to normal. This is repeated once or twice in twenty-four hours. In the interval, the patient's condition is apparently good early in disease. In late cases, frequent pulse regardless of temperature rise, pyemic temperature curve, and generally bad conditions are notice-

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able: When hard cord-like ridges along the course of the veins do not exist, the absence of these symptoms are valuable in excluding this disease.

In 1895, I read a paper upon this subject before the Southern Surgical and Gynecological Association, detailing four cases treated by incision and drainage with four recoveries. The paper excited much interest and favorable comments. Since that time, four additional cases have come into my hands. To those are now added eleven others culled from the literature of the subject. All of them have been verified either by operation or autopsy. A number of doubtful cases have been thrown out as untrustworthy. Of the nineteen cases, four were postmortem findings, four hysterectomies, with one death, and eleven others that were incised and drained with eleven recoveries. Fourteen followed full term of delivery, three abortion, two not stated, but all were puerperal in character. The number of abscesses in each case varied considerably, twelve having but one abscess each, three two, three multiple abscesses, and one case not stated. Of the three multiple abscess cases, one had ten and another had twenty.

The location of the abscess was mainly upon the posterior wall near the fundus, twelve occuring at this point, two on the anterior surface of the uterus, one on the fundus, one on the posterior wall of the cervix, one on the right side near the fundus. Of the total number, sixteen occurred in the region near the fundus, posterior, anterior, side, etc.

The abscesses were either subperitoneal or just under the outer muscular layer of the uterus. This is accounted for, perhaps, by the fact that the main blood supply to the uterus is through this layer of muscle, consequently, the vascularity of the parts favored phagocytic action at this point, the spread of infection becoming modified, suppuration resulted at the place where the barrier appeared. If such is not the case, suppurating centers should be found in deeper parts of the uterine walls with equal frequency.

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When I read my paper at St. Louis, it was a matter of some surprise that only two cases had infected tubes, neither of which were bilateral. The impression seemed to have prevailed, that the Fallopian tubes were the only avenues of infection to the peritoneum; but so many abscesses occurring without involvement of the appendages show that the infection passes directly through the wall of the uterus, along the lymphatics or bloodvessels. In this way acute peritonitis was excited on the posterior wall of the uterus. And in two cases the abscess burrowed through the peritoneum, one resulting fatally, the other becoming circumscribed by intestinal adhesions was later drained by me.

In one case there was thrombophlebitis of the pampiniform plexus and uterine and ovarian veins of the right side. The condition was such the veins required ligation and excision as high as the brim of the pelvis. The case also had four retention abscesses between the coils of the intestines. Another case had five abscesses similarly situated. A prominent surgeon tried to drain the latter case through the vagina, making two attempts, but failed. When I opened the abdomen, the utter hopelessness of drainage by that route was apparent. The pus centers were too high in the abdomen and the fundal abscess so inaccessible, the fingers could never have reached them from below, or, if perchance the uterine abscess could have been reached, it very likely would never have been detected as its elevation above the surrounding surface was so limited it would not have been located by the sense of touch. Other cases have proved to my mind that, in this class, cases are more accessible from above the brim of the pelvis. It is certain they can be better handled through the abdominal incision even if it should be desirable to drain below. The history of these cases show that the expectant plan of treatment promises nothing. They all die.

Hysterectomy gave a mortality of 25 per cent. and perhaps would have been more if a larger number of cases had been

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treated by such means. All drainage cases recovered—eleven in number, eight in my hands, three in others. This is a good showing when compared with the high mortality of puerperal hysterectomy.

It is but a reasonable conclusion to say that an abscess in the uterus should be treated as similar pus collections elsewhere, that is, upon general surgical principles. Exceptions, however, should be made in cases of multiple abscesses, for the chances of successful drainage are doubtful. Besides the uterine musculature in such cases is so much involved in septic inflammation nothing short of hysterectomy will answer.

Further, I am impressed with the idea that the quickest and best work can be done through the abdominal incision even if drainage is made through Douglas' pouch. Complications encountered in the abdomen, and especially thrombophlebitis of the pelvic veins, occasionally require attention that is impracticable by the vaginal route. All of my cases were treated by the abdominal incision, but in three, drains were pushed through into the vagina, one drained through stab wound near the abdominal opening, and four through the primary incision.

If this short paper directs the attention of this Society to a diseased condition often overlooked it will serve its purpose.

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No.	Name.	Bibliography.	No. abscesses.	Classification.	At term.	Abortion.	Location.	Appendages.	Period of inf.	Autopsy.	Operation.	Results.	Remarks.
1	Vancourtland, E.	Canada Med. Jour., Montreal, 1852-3, i, p. 6.	Tumor like 1	Puerperal.	1	...	Fundus	...	...	...	¼ tea cup pus	R.	Symptoms of pneumonia; cough.
2	Storer, H. R.	Boston Med. & Surg. Jour., 1864, lxx, 69-71.	1	P.	1	...	P. wall cervix	Normal	...	P. M.	...	D.	Abscess; no outlet.
3	Lucas Championniere.	Bull. Soc. Anat. de Paris, 1869, xliv, pp. 458-9.	...	P.	...	...	...	...	...	P. M.	...	D. (?)	Presentation of specimen (a).
4	Dr. Finnell.	Med. Rec., N. Y., 1871-2, i, 403.	1 (5 or 6 oz.)	P.	...	1 (7 mos.)	Ant. fundus	...	...	P. M.	...	D.	Subperitoneal.
5	Augustyn Pieler, F.	Dissertation. Abcessus parietis uteri, 1893, 70 pp., 80 Lieden.	1	N. P. (servant girl)	1	...	R. side fundus	Normal	...	...	Drained	R.	Diagnosis; bilateral pus tubes.
6	Jonas, A. F.	Amer. Jour. Obst., xxi, 1895, p. 357.	1	P.	1	...	Behind bladder; A. fundus	...	...	...	Extra peritoneal drain	R.	Abscess extending half way between umbilicus and symphysis; large am't of gas in abscess.
7	Picheren, R., and P. Aug.	Semaine Gynec., Paris, 1896, i, pp. 98-100.	1	P (size of small nut)	...	...	...	...	...	...	Hysterectomy	R.	Diagnosis fibroma; operation 57 days after labor.
8	Turenne.	Gynecologie, Paris, 1898, iii, pp. 105-108.	Multiple.	P.	1	...	Large no. in fundus	...	...	...	Vag. hysterectomy	R.	Small abscess in broad ligament.
9	Brindeau.	Bull. Soc. d'obst. de Paris, 1901, iv, pp. 105-6.	2	P.	...	1	1 A. surface 1 near fundus	...	...	P. M.	...	D.	One tumor size of hen's egg; tumor discharging in peritoneal cavity.
10	Cartiledge.	Trans. South'n Surg. & Gyn. Association, 1895.	10	P.	1	...	Mainly fundal	Normal	...	...	Hysterectomy	R.	
11	Cartiledge.	Ibid.	20	P.	1	...	Mainly fundal	Normal	...	...	Hysterectomy	D.	
12	Noble.	Ibid, 1897.	1	P.	1	...	Fundus	L. side	2 weeks	...	Drained	R.	
13	Noble.	Idid.	2	P.	1	...	"	Normal	2 weeks	...	"	R.	
14	Noble.	Ibid.	2	P.	...	1	"	"	18 days	...	"	R.	
15	Noble.	Ibid.	1	P.	1	...	"	L. tube and O	...	...	"	R.	
16	Noble.	Grady Hospital.	1 (?)	P.	1	...	"	Normal	...	...	"	R.	
17	Noble.	Ibid.	1	P.	1	...	"	Too late tod't'ct	...	...	"	R.	Drainage through umbilicus.
18	Noble.	Private Infirmary.	1	P.	1	...	"	Adh'r'd largely	About 4 weeks	...	"	R.	Had several attempts at vaginal drainage; R. thrombophlebitis.
19	Noble.	Ibid.	1	P.	1	...	"	R. thrombophlebitis.	3 weeks	...	"	R.	R. pampiniform plexus; uterine and ovarian veins.

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CASES EXCLUDED ON ACCOUNT OF UNRELIABILITY.

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DISCUSSION.

DR. T. J. WATKINS.—I presume we are all agreed that in most cases of puerperal infection, the infection extends by way of the lymphatics, and occasionally by way of the bloodvessels; that in puerperal tubal infections the abscess is more often found in the wall of the tube than in its lumen. This very interesting paper of Dr. Noble's brings up the question as to when we shall operate, and when we shall not operate. I believe Dr. Noble is right in saying that hysterectomy in these cases has proven more harmful than useful. In puerperal infections I am convinced that, as a rule, it is not so much what we do as it is the amount of virulence of the infection and the amount of resistance of the patient to infection. I believe, usually, if the infection is not severe, the patient will recover whether we operate or not; and if the infection is severe, the patient will die, no matter whether we operate or not. In some of these cases that have recovered after I have done rather radical operation, I believe they were cases where the infection was not very virulent, and I believe the patients would have recovered if I had not operated. We know more about this subject than we did formerly, and are better able to take care of these infections. We know how infection loses its virulence and soon

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becomes sterile. We sometimes open the bad cases, where we have a large puerperal inflammatory exudate, but where the adhesions are very extensive, and we are unable to do anything; we close the abdomen and the patient goes on to a complete recovery. My conclusion would be that in most all of these cases I prefer to depend upon Nature's ability to destroy the infection, to use all known means to increase the resistance of the patient, and to do little or no operative work.

One must admit, however, that the treatment outlined by Dr. Noble for selected cases deserves commendation.

DR. WILLIAM M. POLK was asked to continue the discussion. He said.—I take it that the kind of case that Dr. Noble had in mind was one in which the pathological process had reached a point at some distance from the initial lesion, and that the case was probably two or three weeks old. Am I right?

DR. NOBLE.—In the second week.

DR. POLK.—It was not a case that would come within the earlier days of infection, at the time when a very large part of the constitutional disturbance depends upon the general activity of the poison. Dr. Noble had to deal, therefore, not so much with the condition of acute constitutional infection as a condition of local suppuration, and the inevitable results which would follow from prolonged suppurations upon the body at large. That being the case, it seems to me that Dr. Watkins' objection, while it would unquestionably apply to the removal of the uterus in the earlier stages of such a process, possibly would not apply to the removal of the uterus in the later stages of such a process, when the condition had reached the state of a local as distinct from a general infection.

If such was not the case unquestionably the objections raised by Dr. Watkins would stand. If the conditions that Dr. Noble had in mind are those which I spoke of, and which he assents to, I think we have really to consider the advisability of removing a uterus which is filled with abscesses, as seemed to have been the case in his instance. In such a case, if we attempt to make an incision from below, or, for that matter, if we drain them from above, the conditions that will be left behind do not leave us in position to warrant attempt to save the uterus. If the uterus is left, the chances are the appendages are so diseased or destroyed there is no chance for any recuperation that would lead to the continuance of health in that woman—a degree of

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health that would prevent her being under the constant care of a physician. Such being the case, not only for the immediate purpose of relief, but also for the remote results, it seems to me, Dr. Noble's contention is correct. I agree with Dr. Watkins that in many cases in which the infection is not sufficiently virulent to promptly destroy life, the patients will recover without operation unless the suppuration or inflammatory exudate has materially extended or the locality become infected through close proximity of the intestine. Such cases will require operative interference.

DR. FLORIAN KRUG.—I would like to ask whether the essayist in these cases made a distinction between abscess and multiple abscess of the uterus, or general infection of the uterus; whether the diagnosis was made previously, or whether it was only made during the operation?

I think we all, more or less, look upon the method of procedure described as one to be undertaken or none at all, if we are able to make a diagnosis. I find it is one of the most difficult things to differentiate between multiple abscess and general infection. I would also like to ask Dr. Noble whether in his cases he made use of blood cultures and blood counts as an aid to diagnosis? In connection with that, I may say that it has been my province to see a number of patients at the Mount Sinai Hospital who have become infected. I am collecting statistics, subjecting every patient to having a blood culture made and many blood counts. So far, in every one of them we have obtained a positive result, the streptococcus being found in the blood taken from the vein, and death has been inevitable in such cases, no matter what the procedure was that was undertaken. In other cases, where the general condition seemed to be almost hopeless, but where a blood culture was negative, and where nothing was done except to stimulate the patients and put them in better condition, the patients have recovered, so that the house staff have wondered about it. They never thought it was possible for such patients to live.

I think every one of us should help along statistics in this regard, and get what diagnostic aid we can from blood counts in the different types of puerperal infection. I think there is a vast field for improvement in diagnosis and consequently in treating in this class of cases.

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Speaking of the early stage of infection, it is my impression that many of these patients that recover in the early stage would have recovered without hysterectomy, and that all those patients who die of general infection, in which a positive streptococcus culture in the blood is found, would die whether hysterectomy were done or not.

DR. NOBLE.—In the beginning, I stated that in this short paper I would not consider puerperal infection. I mean by that, the direct effects, so to speak, or the first effects at the bedside.

The remarks of Dr. Watkins were directed, I presume, to the more acute forms of infection. These abscesses occur in the second or third week usually. They are simply circumscribed collections of pus from which the patient is being continually worn out, exhausted, with colliquative sweating. All the cases that have been verified by postmortem examination have proven that something must be done in a surgical way, as expectant treatment is useless. They die.

Dr. Polk has a clear understanding of my paper. So far as the diagnosis is concerned, I will say, in reply to the remarks of Dr. Krug, that it is difficult to make the diagnosis in five out of eight cases. In Dr. Cartledge's two cases the diagnosis was made after the operation. All the others, where no special note was made, were simply found at operation or upon the postmortem table.

I was unable to diagnose my first case. I attempted to make a diagnosis by exclusion, that is, to exclude any active infection in the cavity of the uterus from such physical conditions as we see there. Being satisfied as to that point, I endeavored to exclude thrombophlebitis; next, small fibroids, and the only way I could make a distinction in regard to small fibroids was a nodular condition of the surface of the uterus, which one can feel in a relaxed abdomen as flattened, softer, and as lacking in the sharp outlines of a fibroid. Aside from that, I do not know how I can point to any symptoms which are of value in making a correct diagnosis in these cases. Of course, we exclude other diseases, so far as possible. In two of my cases the tubes were involved, consequently I did not make a correct diagnosis, as I expected to find tubular involvement only. But where the appendages were free from involvement, and the muscles were soft and relaxed, I could easily make a diagnosis.

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I want to call attention again to the importance of operating through the abdomen, because you have the advantage of inspecting every section and quarter of the abdomen, and if you break up the adhesions that are existing, going over into the chronic stage, by the vaginal route, you are apt to overlook some pus collections, and vou never know when they are situated between the coils of intestine. You cannot drain the abdomen through the pelvis, and drainage will not last long enough to do any good. If the pus is situated between the coils of intestine, and under the mesentery, you will never reach it by the vaginal route. I would urge, in all these chronic cases of puerperal infection that have gone on to suppuration, exploration by the abdomen, whether you drain below or above.

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ANOMPHALOSIS.

By A. H. Buckmaster, M.D.,
Charlottesville, Va.

There are people who expect to find their friends and acquaintances in Paradise precisely as they were on earth. Aside from those whose features would make known their identity, there are two personages who would be recognized by an anatomical peculiarity—they would be without an umbilicus, *anomphaliacs*. Of course, these must be Adam and Eve, who, since they were formed without a placenta, could not be expected to preserve the remains of this structure.

The dimple that marks the site of the umbilical cord is caused by the contraction of scar tissue in a granulating wound. When this wound, due to the separation of the cord, is open for a long time, subject to a daily dressing and to the application of stimulating powders and other forms of irritation, scar tissue must form in considerable quantity. It is not uncommon to find the umbilical wound open for weeks after birth, and it is not rare to find it as late as a month. The longer it remains open, everything else being equal, the greater the amount of scar tissue. This tissue is wretched stuff to resist long-continued pressure, and I am inclined to believe that many of the cases of hernia coming on after birth are due in part to low resisting powers of the scar tissue at the umbilicus.

An old scar is an invitation to cancer, and this is a valid reason for avoiding it as much as possible.

In addition to the ill-effects of scar tissue, the granulating wound itself offers an avenue for the entrance of infective

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material, and though it may be well guarded by the aseptic obstetrician, who can control the after-treatment of his case, if the medical attendant has to trust to a careless or ignorant nurse, past experience has shown the danger from the entrance of pathogenic organisms.

It occurred to me several years ago that if the umbilical wound could be made to heal by first intention, it would be of great advantage. I make no claim to a priority in suggesting a method by which this can be done, I do not know who deserves credit for such a suggestion, for the more reasonable the plan the more likely it is to occur to a number of men. I have tried a plan, which I will describe later, in eight cases. In six of them the results are all that could be wished. In two cases out of the eight there was a slight trouble in the healing of the wound, but not enough to affect the general result. In all cases the wound was closed in ten days, and instead of a cicatrix, there was a slight linear scar. These children have been started in life without an umbilicus, and I have therefore ventured to offer the term that stands at the head of this article to describe the procedure.

The conditions present about the proximal end of the cord in a newborn child are as follows: Projecting from the child's abdomen is a structure a little more than a centimeter in diameter. It is covered by a smooth glistening membrane and contains a thick jelly-like material, held firmly in position by fibrous tissue, and having imbedded in it the umbilical arteries and the umbilical vein. The cord passes through an opening in the abdominal wall, and the skin of the belly wall grasps it and is reflected over it from a varying distance. Near the abdomen the cord is different from that of the rest of its course, for here it contains more fibrous tissue.

When the cord ceases to be of use, the soft part dries up, and this dried up portion separates from the part that is denser in consistency.

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THE OPERATION. In the usual manner the cord is tied in two places and then cut between the ligatures at the operator's convenience. The baby should be taken to another room, so that the mother will not be disturbed by the cry of the child or by the sight of the trifling procedure. In some cases the child scarcely cries, and I am sure that conscious pain is so little that it may be disregarded. With a sharp pair of scissors free the belly wall, reflected on the cord like a cuff, and push it back. When this has been done the cord may be divided. Sometimes an artery may spurt a little, but torsion or a thin catgut ligature will quickly control the hemorrhage. It will be noticed that in cutting through the cord near the wall how much more fibrous tissue is found than one would expect.

The condition now present is a circular pit surrounded by a ridge of skin, the top of which is raw. By drawing two points on opposite parts of the ridge from each other the circle is changed to an ellipse. The sides of the ellipse are now drawn together by sutures, preferably of silver wire, and in from six to ten days the wound has closed, practically by first intention.

The condition is like an amputation of an arm, in both cases we have a flap which is made from the skin and which covers the stump.

Since I first commenced to discuss this procedure among my friends who are interested in obstetrics I find that many have tried it. But while they have no good objection to the procedure it did not seem to impress them favorably. I believe time will change all this. No anesthetic is necessary, because the child suffers next to nothing, but the operator should work quickly and not where the mother or non-professional spectators might through their ignorance fancy the child was maltreated.

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INFECTION OF OVARIAN CYSTOMATA.

By Henry C. Coe, M.D.,
New York.

The tendency of ovarian cysts, even of the simplest type, to undergo degenerative changes is now so generally recognized that the small size of a neoplasm and the absence of symptoms have ceased to be regarded as indications for non-interference, aside from the low mortality. Only an error in diagnosis, or the objections of the patient to submit to ovariotomy, would prevent an early operation. Hence our opportunities for observing the complications so often reported by former operators occur only in such neglected cases as fail to present themselves until the development of serious symptoms obliges the patient to seek surgical advice. Naturally, with the abolition of the pernicious practice of tapping cysts one common mode of infection has been eliminated.

The sources of infection were imperfectly recognized previous to the advent of bacteriology; hence many rare cases of infection by pathogenic micro-organisms have not been recorded—a fact to be borne in mind in connection with the paucity of reliable scientific observations on the subject. It is the writer's intention to omit any reference to the common form of infection by pyogenic bacteria with which every surgeon is familiar. A *résumé* of the subject, with the bibliography, will be found in a recent paper by our esteemed fellow, Dr. Peterson. The rarer forms of infection by the tubercle and typhoid bacillus have been suggested by the following typical cases occurring in the author's service at Bellevue Hospital.

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Case I.—M. K., aged thirty-six years, presented no family or personal history of tuberculosis. She had had three abortions, the last in January, 1893, previous to her admission. Since then her periods had been profuse and painful. She was admitted May 4, 1903, with a temperature of 100° F., her pulse being 80. Her heart and lungs were normal. Patient well nourished. The abdomen was somewhat tender on pressure. On examination, the uterus was felt to be enlarged and adherent, containing several small fibroids. The right ovary was prolapsed, enlarged, and adherent, and on the right side there was a cyst the size of a hen's egg.

Abdominal section May 9. On incising the peritoneum a small quantity of serous fluid escaped. The omentum was adherent to the intestines, which were studded with miliary tubercles, which were also seen on the serous covering of both tubes. The uterus and adnexa were extirpated and the patient made an uneventful recovery. When seen five months later, she was in excellent health and had gained several pounds. The specimen was carefully examined by Dr. Harlow Brooks, of the Carnegie Laboratory, who reported that the cyst was a dermoid, which involved almost the entire tissue of the ovary, the cyst-wall being formed by the connective tissue of the cortex. A few atrophic and degenerated Graafian follicles were present in the membrane, but the entire germinal epithelium had been eroded and was replaced by a thin layer of granulomatous tissue, in which were found a few recently formed tubercles. Some of the larger tubercles had invaded the substance of the tumor itself. The inner surface of the membrane was partly lined with an irregular layer of epithelial cells, resembling the false skin in their structure. Projecting from this pseudo-epidermis were numerous hairs. The cheesy material consisted of irregular epithelial cells, hair-follicles, sebaceous and sweat glands. No mesodermal structures were present. The Fallopian tubes were thickened, and their lumina dilated, the mucosa being covered with large whitish nodules, which

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showed under the microscope a typical tubercular structure containing large giant cells. The serous covering of the tubes was studded with miliary tubercles of a more recent type than those in the mucosa, hence the inference that the tubercular peritonitis was of secondary origin.

CASE II.—C. S., aged seventeen years, was admitted to the medical ward September 20, 1905, in the third week of a mild typhoid, the diagnosis being undoubted. Her abdomen was only slightly tympanitic, and no tumor could be palpated. Widal reaction positive; leukocytes, 8,400; polymorphonuclear, 70 per cent.

Convalescence was delayed by a thrombophlebitis of the left leg, which kept her in the hospital for two months, when she was discharged in fair condition, November 27.

The patient did not regain her strength, but was able to do light housework until January 5, 1906, when she had a succession of chills, with fever, headache and general muscular pains. She was readmitted to the medical division on the 8th, complaining of severe pain in the right lower quadrant of the abdomen. No cough, expectoration, or night sweats. Temperature, 102.8° F.; pulse, 140; respirations, 36. A positive Widal reaction was obtained. Leukocytes, January 9th, 14,700; hemoglobin, 80 per cent.; polynuclear, 87 per cent. The abdomen was tympanitic, and rigidity was marked over the right iliac region. The spleen could not be palpated as before. I was asked to make a pelvic examination, and found an irregular, elastic tumor as large as a grapefruit on the right side of the pelvis, quite tender on pressure.

The patient was kept under observation for nearly a month, during which time positive Widal reactions were repeatedly obtained, the highest leukocytosis being 18,000. Her general condition was so poor that I hesitated about operating, but finally opened her abdomen February 3. A semi-solid ovarian tumor the size of an orange was removed from the right side. A dense cheesy exudate to the left of the

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uterus surrounded the diseased tube and ovary. On account of the injury to the uterus, resulting from the separation of extensive intestinal and vesical adhesions, the organ was removed with the adnexa. Vaginal drainage with gauze, without irrigation.

The operation was long and difficult, and the patient became so weak at its close that it was necessary to infuse a liter of saline solution containing 30 minims of adrenalin chloride, 1 to 1000. She rallied, but continued to grow weaker, succumbing on the tenth day after operation, without evidence of sepsis. A Widal reaction was obtained the day before her death.

A partial autopsy showed that there was no general peritonitis.

I regret that no detailed report was submitted by the pathologist, who merely stated that the cyst was a suppurating dermoid, and that pure cultures of the bacillus typhosus were obtained from the pus.

The history of the case shows clearly that the patient had a well-marked typhoid, and that she undoubtedly had a dermoid cyst at the time, which became secondarily infected with the specific bacilli, giving rise to the subsequent complications noted in the clinical history. It was to be regretted that attention was called to the pelvis at a time too late to render operative intervention successful, though the responsibility for the delay should properly rest upon the surgeon, as she was under observation for a month in the gynecological division.

The literature of this subject is comparatively meagre. References will be found in a report of two cases of typhoid infection of ovarian cysts by Lewis and Le Conte.[1]

Houl[2] has collected twenty-eight cases, but, as the above-mentioned writers properly remark, doubtless many cases were overlooked previous to the development of bacteriology. Houl calls attention to the fact that in only two of the reported cases (to which he adds a third from Pawlik's clinic) were typhoid

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bacilli found in suppurating cysts. The cases cited by Lewis and Le Conte are interesting because they are the only ones recorded in which a typhoid relapse occurred immediately after operation, and (with one exception) are the only cases in which ovariotomy was performed within a few weeks after the development of the disease.

In Werth's[3] case a dermoid cyst was removed eight months after the primary infection.

In Sudeck's[4] case the operation was seven weeks after the beginning of the fever.

Pitha's[5] patient showed the initial symptoms of the disease four months before the removal of a dermoid containing pure cultures of the typhoid bacillus.

Wallgren[6] recognized the presence of a cyst at the inception of the disease, but did not remove the dermoid until three months later.

Engelmann[7] removed a dermoid containing pure cultures in March, typhoid having developed the previous November with a relapse in January.

Widal and Ravant[8] report a successful operation ten weeks after the diagnosis of typhoid had been made.

Walker[9] reports the case of a patient who developed typhoid in July, 1901, presented a typical Widal reaction in December, and was operated upon the following January, a dermoid cyst being removed, the contents of which showed pure cultures of typhoid bacilli. Pitha, commenting upon the case referred to, states that pure typhoid infection of ovarian cysts is rare, the infection usually being of the mixed type. He infers that the pyogenic is secondary to the typhoid infection, a fact also noted by Houl, who believes that this is an argument in favor of the pyogenic character of the bacillus typhosus.

None of the writers quoted seem to have called attention to the interesting fact that in almost every instance the cyst was a dermoid. This must be more than a mere coincidence, since it would seem to show that the sebaceous

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material forms a more favorable medium for the development of the typhoid bacilli. The tendency of dermoids to suppurate is well known.

The question of diagnosis is of most interest to the general practitioner, especially in cases such as mine, in which attention has not been directed to the pelvis as the possible source of trouble. Late relapses, fever of a hectic type, and persistent abdominal pain and tenderness should lead one to make a careful bimanual examination. Even then a high leukocytosis would point rather to local suppuration. The invariable presence of a Widal reaction in all the cases reported is really the only positive clue to the true condition.

The surgical prognosis is good, as nearly all the patients except mine recovered, although in many the cyst was ruptured during its removal. Delay is always unfortunate.

The literature of tubercular infection of ovarian cystomata is also scanty. Madlener[10] reports a case in which the infection was clearly primary in the Fallopian tube, extending thence to the cyst, the patient later developing pulmonary tuberculosis, to which she succumbed, no operation having been performed. He was able to find a report of only one other similar case.

He distinguishes two classes, viz.: (1) There is a preexisting cyst, which becomes infected secondarily, as in cases reported by Spencer Wells, Baumgarten, and Sänger. (2) The tumor appears to be a cystoma, but on section is found to be a homogeneous cheesy mass—really a primary tuberculosis of the ovary, with secondary cyst formation.

Sänger[11] removed a large cystoma, on the inner wall of which were numerous tubercular nodules. Similar nodules were found in the corresponding tube and scattered over the peritoneum. As the cyst had been punctured several times, the writer inferred that infection had occurred in this way.

It would seem superfluous to deduce from the foregoing

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the oft-repeated lesson that an ovarian cyst should be removed without delay and especially when symptoms of infection arise.

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THE INDUCTION OF PREMATURE LABOR AND ACCOUCHEMENT FORCE IN THE FIRST 5000 LABORS IN THE OBSTETRICAL DEPARTMENT OF THE JOHNS HOPKINS HOSPITAL.

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I have thought that it might be interesting and perhaps instructive to bring before you the results following the artificial termination of pregnancy in the first 5000 women delivered in the Obstetrical Department of the Johns Hopkins Hospital, and afterward to give my impressions of the relative merits of the various procedures employed.

In this series of cases it was thought necessary to induce premature labor in 11 and to resort to accouchement forcé in 100 instances, as follows:

Induction of premature labor by Krause's method	11 cases
Accouchement forcé by Harris' method of manual dilatation of the cervix	83 cases
Accouchement forcé by a Champetier de Ribes balloon	15 cases
Accouchement forcé by vaginal Cesarean section .	2 cases

I shall consider each group separately, and afterward give a brief *résumé* of my views concerning the treatment of the various conditions in which the premature termination of pregnancy may be indicated.

The Induction of Premature Labor by Means of a Bougie. (*Krause's Method.*) This procedure was employed in all cases in which it was deemed advisable for the welfare of

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the mother to terminate pregnancy, but in which the rapid emptying of the uterus was not necessary.

Under such circumstances, after exposing the cervix by means of a bivalve speculum, a thick rubber catheter, 10 to 12 mm. in diameter, was introduced as far as possible into the uterine cavity and held in place by a vaginal pack of sterile gauze. This was usually accomplished without difficulty, and as a rule gave rise to uterine contractions within twenty-four hours; though exceptionally a longer period and the introduction of a second bougie were necessary to bring about the desired result. After the onset of uterine contraction labor usually progressed spontaneously and the patients were delivered without difficulty. This method was employed in the following conditions and gave most satisfactory results:

Cardiac lesions with broken compensation	2 cases
Pre-eclamptic toxemia	2 cases
Retention of dead fetus	2 cases
For experimental purposes	2 cases
Hydramnios	1 case
Infection during pregnancy	1 case
Overdevelopment of child	1 case

All of the patients recovered and, upon examination at the time of discharge, the cervix was found to be uninjured in 9 and only slightly torn in 2 cases.

Harris' Method of Manual Dilatation of the Cervix was employed in 83 instances, as follows:

Eclampsia	33 cases
Pre-eclamptic toxemia	7 cases
Placenta previa	12 cases
Danger to mother or child during the course of labor	31 cases

1. *Eclampsia.* Accouchement forcé was resorted to in 33 cases of eclampsia with 7 deaths. As 5 of the patients did not regain consciousness after delivery, their deaths must be attributed to the underlying disease. On the other hand, 2 patients died as the direct result of the operation,

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one from infection and the other from incomplete rupture of the uterus.

A better idea of the efficiency and dangers of the operation may be gained from the consideration of the condition of the cervix, as noted immediately after delivery or at examination prior to discharge. The cervix was uninjured in 11, slightly torn in 3, and deeply torn in 19 instances; while in 6 of the latter cases the laceration was so deep as to give rise to serious hemorrhage and necessitate immediate repair. Moreover, it is probable that these figures do not accurately represent the extent of the damage, for the reason that in some of the earlier cases a special note was not made concerning the condition of the cervix at the time of discharge. Therefore, it may well be that a few cases of moderate laceration escaped detection, as it has always been my rule not to make vaginal examinations at the conclusion of the third stage of labor, unless imperatively called for. On the other hand, there can be no doubt as to the accuracy of the statement that 6 cases required immediate repair.

It is manifestly impossible in many cases to state whether the injury was the direct result of the manual dilatation, or followed the attempt to drag the head through an imperfectly dilated cervical opening. At the same time, this distinction is of but slight importance, as in either event the damage should ultimately be attributed to the operation, for if it did not give rise to the deep tear directly, it nevertheless contributed to its production in that it failed to bring about sufficient dilatation to permit prompt delivery.

Still further information as to the value or danger of the operation may be gained by considering the condition of the cervix prior to dilatation, and noting what relation, if any, it bore to the occurrence of laceration. For this purpose I have divided the cases into four groups: (*a*) Cervical canal intact, external os not dilated. (*b*) Cervical canal obliterated, external os not dilated. (*c*) Cervical canal

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obliterated, external os less than 4 cm. in diameter. (*d*) Cervical canal obliterated, external os more than 4 cm. in diameter.

(*a*) In thirteen of the eclamptic cases the cervical canal was intact and the external os not dilated at the beginning of the operation. Under such conditions it was necessary to effect preliminary dilatation by means of Goodell's or Hegar's dilator, in order to permit the introduction of the tips of two fingers, after which dilatation was completed by Harris' method. Such operations, as a rule, were extremely difficult and required thirty to sixty minutes for their completion. Four of the thirteen patients died. Two did not come out of coma, while the other two deaths were directly attributable to the operation, one from incomplete rupture of the uterus and the other from infection, as is clearly shown by the history of the cases.

Case 496. A forty-eight-year-old multipara entered the hospital for toxemia of pregnancy. While under treatment she had two eclamptic attacks. At that time the cervix was found to be quite hard, the external os just admitting the tip of the little finger. Dilatation was effected without great difficulty by Harris' method and the child turned and delivered. There was no hemorrhage after the extrusion of the placenta, and the patient rallied without difficulty, though considerably shocked. Six days later she had a profuse uterine hemorrhage, from which she died, in spite of packing the uterus, the use of saline infusions and vigorous stimulation. No autopsy was permitted, but vaginal examination showed that the hemorrhage in all probability came from a deep cervical tear extending up into the lower uterine segment and the base of the broad ligament.

Case 571. A twenty-one-year-old multipara was admitted to the hospital in the seventh month of pregnancy, conscious but very drowsy, with a history of having had twelve convulsions. The routine pelvic measurements were

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22, 24.5, 28, 17.5 and 11.75 cm. The cervix was very hard and almost cartilaginous in consistency, while the external os would not admit the tip of the little finger. Dilatation was begun with Goodell's instrument and after an hour's efforts its canal would admit only the little finger, so that it was out of the question to attempt Harris' method. Accordingly, a small Champetier de Ribes balloon was introduced, and, upon withdrawing it twenty four hours later, the cervix was found to be considerably softened but only sufficiently dilated to admit the index finger without difficulty. Further dilatation was effected by means of Hegar's graduated bougies and finally by Harris' method. At least one hour was required to bring about sufficient dilatation to permit version and extraction of the dead fetus. The cervix was deeply torn, but as it did not give rise to hemorrhage it was not repaired. Death occurred eleven days later from infection, which the autopsy showed was clearly attributable to the prolonged manipulation and injury to the cervix.

These two deaths do not exhaust the untoward effects of manual dilatation under such circumstances, as one finds that the cervix was uninjured in only three cases, while it was slightly or deeply torn in three and seven cases, respectively. Three of the latter gave rise to profuse hemorrhage and required immediate repair.

(*b*) Harris' method was employed in seven cases in which the cervical canal was obliterated but the external os not dilated. In this group of cases manual dilatation was usually effected without great difficulty. One patient died in coma while the other six recovered. Even under such circumstances the operation cannot be said to be absolutely devoid of danger, as the cervix was uninjured in only two instances while it was deeply torn in five cases, two of which required immediate repair on account of profuse hemorrhage.

(*c*) In eleven cases the cervical canal was obliterated and

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the external os dilated to less than 4 cm. Under such circumstances, the completion of dilatation by Harris' method was usually very easy and could be effected within a few minutes. One patient died in coma, but none from the effects of the operation. The cervix was not injured in five, but was deeply torn in six cases, one of which gave rise to profuse hemorrhage and required immediate repair.

(*d*) In two cases the cervical canal was obliterated and the external os dilated to more than 4 cm. in diameter. Completion of dilatation by Harris' method was readily effected. Both patients recovered, but in one the cervix was deeply torn.

2. *Pre-eclamptic Toxemia.* Accouchement forcé by Harris' method was resorted to in seven cases of pre-eclamptic toxemia. In each instance the cervical canal was intact and the external os not obliterated. Preliminary dilatation by means of Goodell's or Hegar's dilators was necessary before Harris' method could be employed and the operation was usually difficult and required considerable time. Two of the patients died—one from toxemia and the other from incomplete rupture of the uterus due to the operation.

In this instance, Case 1126, a thirty-four-year-old V-para, six and one-half months pregnant, was admitted to the hospital with marked albuminuria and very extensive edema, presented muscular twitchings and every symptom of impending eclampsia. The pelvis was normal and the small child lay in the left sacroiliac anterior position. The cervix was already partially dilated, its canal being 2 cm. long, and the external os readily admitted two fingers.

As eclampsia appeared to be imminent, accouchement forcé was deemed necessary, and the cervix was readily dilated by means of Harris' method without appreciable tear, after which a markedly edematous child was extracted without difficulty. There was considerable hemorrhage during the third stage, and, as the placenta could not be expressed by Credé's maneuver, it was removed manually,

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when it was found to be immensely dropsical and weighed 1200 grams. Upon introducing the hand into the uterus, a deep tear was discovered on the left side of the cervix, which upon further examination was found to extend up into the broad ligament, giving rise to a cavity 7 or 8 cm. in diameter, which was separated from the abdominal cavity only by the peritoneum. After tightly packing the cavity with gauze the hemorrhage apparently ceased, and the patient was put back to bed in good condition. Two hours later, however, she suddenly became pallid and died in collapse in less than half an hour. An autopsy was not permitted, but vaginal examination after death showed the presence of a large subperitoneal hematoma, which had originated from the incomplete rupture of the uterus.

In two of the seven toxemic cases the cervix was not injured; while it was slightly torn in two and deeply torn in three cases, one of these being the case first described, while in another instance immediate repair was necessary on account of hemorrhage.

3. *Placenta Previa.* Accouchement forcé by Harris' method was employed in twelve cases of placenta previa, in four of which the cervix was intact, while in eight the cervical canal was obliterated and the external os more or less dilated. Three patients died, two of whom were brought to the hospital in an exsanguinated condition and died in collapse immediately after delivery, but in neither instance could the fatal termination be attributed to the operation, as there was no injury to the cervix. The third patient, however, died from hemorrhage from an incomplete rupture of the uterus, which resulted directly from the manual dilatation of the cervix.

This patient (No. 1297), a forty-four-year-old VIII-para, was sent to the hospital markedly exsanguinated following repeated hemorrhages. The pelvis was normal and the nearly full-term child lay in the left occipitoiliac anterior position. On examination, it was found that one had to

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deal with a complete placenta previa, and that the cervix was soft and partially obliterated, the external os being 2.5 cm. in diameter. During the examination the hemorrhage became so alarming that it was thought advisable to complete dilatation by Harris' method. This was readily accomplished, though the cervix was felt to tear during the latter part of the operation. The dead child was turned and extracted without difficulty. As there was profuse hemorrhage after the extrusion of the placenta, the cervix was brought to the vulva, and as it was found to be deeply torn on the left side it was repaired at once and the hemorrhage apparently ceased. Four hours later the patient suddenly died, and at autopsy a large subperitoneal hematocele was found on the left side of the uterus, which had originated above the sutures uniting an incomplete tear in the lower uterine segment.

Including this case, the cervix was slightly torn in one and deeply torn in six instances, in five of which immediate repair was necessary in order to check hemorrhage.

4. *Danger to Mother or Child.* In thirty-one women who had already fallen into labor, dilatation of the cervix was completed manually by Harris' method when some condition had arisen which so seriously threatened the life of the mother or the child as to render necessary the immediate termination of labor.

The following conditions necessitated interference:

Intrapartum infection	8 cases
Exhaustion, as indicated by a pronounced rise in the maternal pulse	8 cases
Marked variations in the fetal heart rate	5 cases
Prolapsed cord	4 cases
Various indications	6 cases

With one exception, all of the mothers recovered without difficulty, and the single death was in no wise connected with the operation, but was due to profound disturbances resulting from a partial intestinal obstruction and an exten-

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sive thrombosis of the vessels of the left leg originating during pregnancy. This case was reported in detail by F. C. Goldsborough (*Bulletin of Johns Hopkins Hospital*, 1904).

In every case of this series the cervical canal was obliterated while the external os was less than 4 cm. in diameter in 9 and dilated to a greater extent in 22 cases. On discharge the cervix was found to be uninjured in 20, slightly torn in 6 and deeply torn in 5 cases, only one of which, however, required immediate repair.

Upon summarizing the results obtained, it is found that Harris' method was employed in 83 cases, as follows:

	Cases.	Deaths.
Eclampsia	33	7
Toxemia	7	2
Placenta previa	12	3
Danger to mother or child at time of labor	31	1

Of the 13 deaths, 4 were clearly due to the operation (4.82 per cent.), 1 patient having died from infection and 3 from hemorrhage following incomplete rupture of the uterus. Each of these deaths occurred in my own hands, so that no blame can be attached to my assistants. Moreover, it should be noted that they all occurred in the first 2500 cases, so that several of them, at least, must be regarded as the premium paid for experience.

The condition of the cervix following the operation is shown in the following table:

	Number of cases.	No tear.	Slight tear.	Deep tear.	Deep tear giving rise to hemorrhage and requiring immediate repair.
Eclampsia	33	11	3	13	6
Toxemia	7	2	2	1	2
Placenta previa	12	5	1	1	5
Danger to mother or child	31	20	6	4	1
	83	38	12	19	14

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It would, therefore, appear that the cervix was not injured or only slightly torn in 50 out of 83 cases, while it was deeply lacerated in 33 (39.79 per cent.). In 14 of the latter (17 per cent.) it was so deeply torn as to give rise to profuse hemorrhage and require immediate repair. Moreover, it is evident that the results were much worse in placenta previa than in any other condition, as one-half of such cases were deeply torn and 42 per cent. required immediate repair.

Champetier de Ribes' Balloon. My experience with this method of cervical dilatation is comparatively limited, as it was employed in only fifteen instances, namely: twelve of danger to mother or child, and one each of eclampsia, toxemia, and placenta previa. All of the patients recovered. The cervix was uninjured in six cases, while it was slightly or deeply torn in three and six cases, respectively. In two of the latter, hemorrhage necessitated immediate repair.

Vaginal Cesarean Section. In the 5000 cases under consideration, vaginal Cesarean section was employed twice, once for eclampsia and once for profound toxemia associated with twin pregnancy. In both instances the operation was very successful from a technical point of view, although one of the patients died, partially from hemorrhage following uterine atony and partially from the underlying intoxication.

Critique of Methods. From my experience in the series of cases just considered, as well as in my private practice, I would draw the following conclusions concerning the relative merits of the various operative procedures for the premature termination of pregnancy:

(*a*) *Krause's Method.* This is the safest method at our disposal in any case in which immediate delivery is not urgently indicated. It should therefore be the method of choice whenever the termination of pregnancy is demanded in cases of broken heart compensation, pyelonephritis, retention of dead fetus and various other indications, and

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particularly in all cases of toxemia which have grown gradually worse in spite of appropriate treatment, but in which an outbreak of eclampsia does not appear imminent. Its only drawback consists in its comparative uncertainty, as one has no means of predicting in a given case whether pains will supervene within a few hours after the introduction of the bougie, or whether it will become necessary to introduce a second one at the end of twenty-four hours. In the vast majority of cases, however, labor sets in within this period and progresses in a most satisfactory manner, with a minimum amount of disturbance.

(*b*) *Harris' Method of Manual Dilatation.* It is difficult to give a perfectly just estimate of the value of this procedure; though as the result of my experience I feel that it is both difficult and dangerous in all cases in which the cervix is intact and the external os not obliterated, except in the occasional instances in which the entire cervix is unusually softened.

Exceptionally, the cervix is so rigid that even preliminary dilatation cannot be effected, and under such circumstances it will naturally be impossible to resort to Harris' method. I have met with only one case of this description, and have already pointed out that the death of the patient from infection was clearly attributable to prolonged and unjustifiable attempts at dilatation by various methods.

More frequently, it is possible to dilate the cervix sufficiently to admit two fingers by means of the instruments of Goodell or Hegar, after which further dilatation may be effected by Harris' method. In many instances, however, this is very difficult and can be accomplished only at the expense of a deep cervical tear, which sometimes extends far up into the lower uterine segment and gives rise to incomplete rupture of the uterus.

Accordingly, I do not believe that dilatation by this method should be attempted in this class of cases, unless the cervix is so soft that it will presumably offer but slight resistance.

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In all other cases it would seem to be more conservative to resort to vaginal Cesarean section, or confine oneself to purely medicinal treatment if not prepared to resort to radical surgical measures.

On the other hand, manual dilatation is comparatively safe and readily accomplished when the cervical canal is obliterated and the resistance offered only by the external os. Indeed, under such circumstances, dilatation is frequently so readily effected that the chief care of the obstetrician must be directed toward guarding against its too rapid completion, and I have no hesitation in saying that the more slowly it is effected the better it will be for the patient and the condition of her cervix. For some reason it seems that as soon as the cervix has begun to yield, that is as soon as it will admit the thumb and first two fingers, the obstetrician is usually seized with an almost incontrollable desire to complete the dilatation as rapidly as possible; and even although perfectly well acquainted with the dangers of rapid operating, he has the greatest difficulty in proceeding sufficiently slowly, being invariably inclined to overestimate the time consumed, and if left to his own sensations will interpret a few minutes by the clock as fifteen or twenty minutes. Accordingly, I have made it a rule to have a clock or watch placed within ready view, by which I can time myself and thereby guard against too great haste. If this precaution is taken and twenty to thirty minutes actually consumed in the operation, one can almost invariably avoid serious lacerations; and I am sure, had this rule been followed in all of our cases, that the degree of traumatism would have been diminished by more than one-half.

When labor has already progressed to such an extent that the external os is partially dilated, the operation is usually most satisfactory and extremely easy; while the danger of cervical rupture is reduced to a minimum, provided the precautions just indicated are carefully followed. I am confident that recourse to the operation under such

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conditions has, in my hands, been the means of saving many fetal lives and of relieving a number of patients of unnecessary suffering.

On the other hand, the operation is extremely dangerous in placenta previa, and an earnest note of warning should be sounded against its employment in that condition. As has already been indicated, manual dilatation was followed by deep tears in 50 per cent. of the cases in which it was employed, all but one of which were so severe as to give rise to hemorrhage and require immediate repair. Moreover, in one of these cases the fatal issue was the direct result of the operation, and was due to an incomplete rupture of the uterus.

The liability to injury lies not so much in the operation itself as in the extremely friable condition of the cervix in placenta previa, and even though every precaution may be taken and the operation performed in the most deliberate manner, deep tears will occur when least expected and occasionally lead to death. Thus it would seem that Harris' method is an unsuitable procedure in placenta previa and materially adds to the maternal mortality. Accordingly, in such cases, some other method of treatment should be adopted, as will be indicated below.

(*c*) *Champetier de Ribes' Balloon.* This method of terminating pregnancy is quite satisfactory where haste is not essential, provided the cervix is sufficiently dilated to permit the introduction of the bag. Under other conditions this cannot be effected until after preliminary dilatation under anesthesia, and occasionally cases will be encountered in which the cervix is so rigid that even this is impossible. In general, however, it may be said that, whenever time is not a serious element, the results obtained by means of the bag are on the whole more satisfactory than those following Harris' method; although stress should be laid upon the fact that occasionally even the expulsion of a large sized bag does not necessarily imply complete dilatation, and

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under such circumstances Harris' method must be resorted to if it is desired to bring about immediate delivery.

Reasoning by exclusion, rather than from my own personal experience, I believe that the use of the bag is the treatment par excellence in cases of placenta previa.

(*d*) *Vaginal Cesarean Section.* This operation, as described by Dührssen, is most satisfactory from an operative point of view, provided one is supplied with suitable instruments and competent assistants. My experience with it, however, has led me to believe that it is not adapted for general employment in private practice, and can be undertaken satisfactorily only by those who possess special surgical training.

In order to obtain a sufficiently extensive view of the field of operation, it is essential that very large vaginal specula be employed, such as those devised by Jacob or Pryor, since the ordinary Simon specula do not permit a satisfactory exposure. When suitable specula are employed the entire lower uterine segment can readily be brought in view, so that the entire operation is performed under the guidance of the eye. Moreover, in my experience, the operation is materially facilitated if both an anterior and posterior incision is made, as recommended by Dührssen, instead of merely an anterior one as practised by many operators.

It has been a matter of great surprise to me how little hemorrhage occurs during the course of the operation, which scarcely exceeds that observed in an ordinary spontaneous labor. There is, however, one point upon which Dührssen lays especial stress, and whose importance cannot be overestimated, and that is the necessity for prophylactic packing of the uterus, as it would seem that there is an unusual tendency toward its relaxation after this operation, and the fatal outcome in one of my cases appeared to be due in great part to the neglect of this precaution.

Thus far Dührssen's vaginal Cesarean section has been performed upon four patients in my clinic, and I have been

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so pleased with the results obtained that I feel that in the future it will almost entirely supplant other methods of promptly emptying the uterus when the cervical canal is intact, as it affords a satisfactory means for terminating pregnancy within five or ten minutes, and at the same time does away with the fear of deep and jagged cervical tears, and presents clean-cut incisions which can be nnited by sutures under the guidance of the eye.

Recommendations for Practice. What I shall now say applies only to well-directed lying-in hospitals, as several of the procedures advocated cannot be carried out in ordinary private practice without undue danger to the patient.

(*a*) *Induction of Premature Labor.* In the series of cases just considered, we have not thought it necessary to induce premature labor on account of pelvic contraction. I have already elaborated my views on this subject upon several occasions, and shall here only say that I do not consider in the present state of obstetric surgery that such an operation is indicated except under the most exceptional conditions, as I believe that one will save a far greater number of children without materially increasing the maternal mortality by allowing such patients to go to term, and, if spontaneous labor does not occur, effecting delivery by forceps, pubiotomy or Cesarean section, as may seem most appropriate in the individual case.

In all other cases in which the termination of pregnancy is desirable, but haste is not imperative, I believe that almost ideal results will be obtained by Krause's method. In my experience, labor usually sets in within twenty-four hours after the introduction of the bougie, and usually runs a spontaneous course. Moreover, the condition of the cervix is a matter of indifference when this method is to be employed, as an intact canal usually offers no obstacle to the introduction of the bougie.

(*b*) *Accouchement Forcé.* In the treatment of eclampsia the procedure to be adopted depends almost entirely upon

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the condition of the cervix, as I believe that labor should be terminated in every case as soon as consistent with the safety of the patient. In view of what has already been said concerning the danger of attempting to dilate an intact cervical canal by means of Harris' method, I consider that in hospital practice the ideal method of delivery for such cases is by means of the vaginal Cesarean section, and that when this operation is undertaken by a competent operator with trained assistants, and under satisfactory conditions, it will afford almost ideal results. Of course, Harris' method may be employed in the rare cases in which the intact canal feels so soft and succulent that the operator gains the impression that manual dilatation can be effected without great difficulty. But, with this exception, I consider that vaginal Cesarean section will give better results and expose the patient to less danger of laceration and infection than preliminary dilatation by the instruments of Goodell or Hegar, followed by Harris' manual method.

On the other hand, when the cervical canal is obliterated and the resistance is offered only by the external os, dilatation by Harris' method is usually indicated and can be readily effected with but little danger to the patient. In exceptional cases it may appear that the external os is so rigid that dilatation by Harris' method appears impracticable, and under such circumstances the propriety of resorting to vaginal Cesarean section should be considered. When the external os is partially dilated, Harris' method is the procedure par excellence and can yield nothing but good results, provided the operator uses ordinary discretion and guards against too great haste.

No doubt equally good results may be obtained by the bimanual methods of Edgar or Bonnaire, but, as I have had no experience with them, I shall not speak of them.

I have not employed Bossi's metallic dilator, nor have the statements of its most enthusiastic advocates tempted me to do so. As far as I can see, its use is not indicated

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when the cervical canal is intact; while in the cases in which the resistance is offered only by the external os, or in which the latter is already partially dilated, it is impossible for it to give better results than those obtained by Harris' method.

(*c*) *Placenta Previa.* As has already been indicated, I consider that Harris' method is not adapted to the treatment of placenta previa, and the same holds good for dilatation with any metallic instrument, as in such cases the cervix is extremely friable and will tear when least expected.

In my own experience, deep cervical tears occurred in six out of twelve cases, and in one instance death was due to incomplete rupture of the uterus following this method. Moreover, every year in consultation practice, I see one or more women who die not so much from the placenta previa itself as from injury to the cervix following manual dilatation. Accordingly, I feel that this method cannot be too strongly condemned, and in the future I shall hesitate to employ it even in those cases which at first glance appear adapted to it.

On the other hand, I believe that the ideal method of treatment in such cases lies in the use of Champetier de Ribes' balloon or in the performance of bipolar version followed by the gradual extraction of the fetus. The results thus far obtained by abdominal Cesarean section in the treatment of placenta previa are not encouraging, nor do I believe that it is indicated. Possibly the future may teach us that vaginal Cesarean section may have a field of usefulness in this condition, though at present I am not prepared to venture an opinion as to its merits.

(*d*) *Danger to Mother or Child at Time of Labor.* Accouchement forcé in cases in which labor has already set in and the cervix partially dilated is only justifiable if it can be demonstrated that it can be effected without great danger to the mother, or, at least, that the risks to be encountered are not naturally greater than those arising from the original condition.

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Personally I believe, whenever serious danger to mother or child supervenes during the course of labor, that dilatation of the cervix can usually be completed safely and satisfactorily either by the use of the bag or Harris' method; the former if dilatation is only slight, and the latter if it is more advanced.

At the same time it should be stated that neither of these procedures is absolutely devoid of danger, as the cervix was deeply torn in six out of thirty-one cases in which Harris' method was employed, while one required immediate repair to check profuse hemorrhage. This point should be strongly emphasized, as there is a tendency upon the part of many practitioners to interfere upon the slightest indication, and every year I see a number of women in consultation or hospital practice who have been seriously lacerated or profoundly infected by accouchement forcé which had been undertaken merely to hasten the completion of labor, in the absence of a definite indication.

Therefore, I hold that, in this group of cases, the operation should be resorted to only under the strictest indications, when the life of the mother or child is seriously jeopardized, and then only with the greatest care and slowness.

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THE IMMEDIATE RESULTS OF CONSERVATIVE OPERATIVE MEASURES ON THE TUBES AND OVARIES.

By Hunter Robb, M.D.,
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In 1904, I read a paper before the Ohio State Medical Society, in which I presented an analysis of 237 patients upon whom conservative measures had been carried out when dealing with inflammatory lesions of the tubes and ovaries. Since then we have had 182 additional cases, making in all 419 instances in which we have carried out such procedures during the past seven years. We have not included the cases of so-called cystic or cirrhotic ovaries, unless they have been bound down by marked adhesions. We believe that such ovaries are still capable of performing their functions, and the symptoms are apt to be due not to pathological conditions in the ovaries themselves but mainly to adhesions which are binding them down.

But even when the ovaries have undergone actual inflammatory changes, or where they are occupied by tumor formations, or are bound down by adhesions so that their functions are interfered with, and the necessity of operative procedures becomes imperative, we still have to decide how far we ought to go and how we can get the best results for the patient not only immediately but later on. From our experience in this line of work for more than seven years we have been able to thoroughly convince ourselves of the great advantages that may be obtained by preserving as far as possible the integrity of the pelvic organs. It is true that in a small percentage of cases (2 to 5 per cent.), after such a line of

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treatment has been followed, the patient will still have to undergo a second operation before she can be completely relieved of her discomfort, and it is also possible that in a few instances, by the introduction of infection under these circumstances, her condition may be rendered even worse. Such cases, however, in our experience are exceptional. Moreover, a secondary operation is not infrequently necessary in cases where radical measures have been carried out, hence it is not altogether fair to blame the conservative measures for the second operation. We all have had the experience (in a small percentage of cases) of separating post-operative adhesions after carrying out radical measures. Before, however, employing the more conservative procedures we always make it the rule to carefully explain to the patient, or to her friends, that such measures will be undertaken if, in our judgment at the time of the operation, they seem to be advisable. But we further state that, even though we remove what seems to be the inflammatory area, it may later become necessary to institute a secondary operation before relief is obtained. After this very clear statement has been made to the patient, as a rule she is perfectly willing to take a good many chances if there is a reasonable prospect that the conservation of the pelvic organs will be compatible with future health and comfort, and, as we have already said, from actual observation we have found that it does not become necessary to perform a secondary operation in more than from 2 to 5 per cent. of all such cases. If an ovary or a portion of an ovary can be saved before the menopause has begun, or even during the time in which the patient is experiencing this change, we have found that not only the immediate convalescence, but also the subsequent condition of the patient, is in every way more satisfactory. I am sure that all of us have seen many patients suffer more after than before the removal of diseased ovaries. In many instances their discomfort is due to the artificial change of life that is thus brought about. In some instances they may complain

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for five years or longer. And, unfortunately, during this time the addiction to morphine or some other drug habit may be formed in endeavors to relieve their distress. In our opinion the prevention of the artificial menopause is the most important reason for leaving the patient her ovaries whenever this is possible, the question of possible pregnancy following conservative measures being apparently only of secondary importance, as in the majority of these cases the patient is in an unhealthy condition not only for bringing a child into the world, but also for the proper rearing of the same. This criticism, of course, does not usually apply to those cases in which a tumor is present, implicating only one ovary. Where the question of pregnancy is to be considered one has to deal with the condition of the Fallopian tubes as well as that of the ovaries. I will not take up your time with an account of the various methods that are employed in carrying out the conservative measures, as they are perfectly well known to every one. I would say, however, that in the light of our experience it is a wiser procedure to remove the Fallopian tube whenever a pyosalpinx exists, *i. e.*, when there are macroscopic evidences of pus. When, however, the ovary is involved in an abscess formation the same radical treatment is not always indicated, as the abscess in most instances does not involve all of the ovarian stroma. Furthermore, microscopic examination of many of these ovaries will show that the abscess is walled off and the ovarian stroma beneath frequently has been invaded only to a slight extent. In such instances the abscess may be excised and the line of incision be brough together with a fine silk or catgut suture. In our series of cases the lateral structures showed macroscopically marked evidences of inflammatory disease, and there were adhesions which bound down the structures. We have only included in this analysis those cases in which we were able to carry out conservative measures, and not those in which we were obliged on account of the technical difficulties of the operation to leave

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the lateral structures in, on one or both sides, although removal was indicated.

ANALYSIS OF CASES.

Total number, 419. Age: The oldest patient was fifty-two years of age; the youngest, fifteen years of age. Average age, 28.98 years. 1 was fifteen; 1 was sixteen; 9 were seventeen; 14 were eighteen; 18 were nineteen; 14 were twenty; 19 were twenty-one; 24 were twenty-two; 21 were twenty-three; 24 were twenty-four; 22 were twenty-five; 18 were twenty-six; 14 were twenty-seven; 28 were twenty-eight; 17 were twenty-nine; 26 were thirty; 11 were thirty-one; 14 were thirty-two; 15 were thirty-three; 7 were thirty-four ; 16 were thirty-five; 12 were thirty-six; 5 were thirty-seven; 17 were thirty-eight; 10 were thirty-nine; 9 were forty; 4 were forty-one; 6 were forty-two; 2 were forty-three; 3 were forty-four; 5 were forty-five; 3 were forty-six; 4 were forty-seven; 3 were forty-eight; 1 was forty-nine; 1 was fifty; 1 was fifty-two. The majority of the patients were between fifteen and twenty-eight years of age.

Menstrual History. The menstrual history was abnormal in 290 and normal in 129 cases.

Leucorrhea. 321 patients gave a history of a leucorrheal discharge. Of these 233 were married, 65 were single, and 23 widowed.

Married Life. 300 were married; 85 were single; 34 were widows. Longest time married, thirty years; shortest time married, two months. Of the 300 married, 207 had borne children. The total number of children borne by the 207 were 502, the average being 1.67 children to each married woman. The greatest number of children borne by one patient was 12. The next greatest number was 11. Stillborn children, 6. Twins 1. Women having borne one child, 98; two children, 43; three children, 32; four children, 24; five children, 8; six children, 7; seven children, 5;

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eight children, 1; nine children 2; eleven children, 1; twelve children, 1.

A history of infection following labor was recorded in 55 cases. Instrumental delivery was followed by infection in 18 cases. The total number in which there was a history of infection following labor, 73.

Miscarriages. Number of patients having had miscarriages, 177; number of miscarriages, 304; married, 146; single, 14; widowed, 17. Abortions or miscarriages had been induced in 81 cases; in the married patients, 53; in single patients, 18; in widows, 10; patients having had one miscarriage, 107; two miscarriages, 42; three miscarriages, 19; four miscarriages, 2; five miscarriages, 4; six miscarriages, 1; seven miscarriages, 1; fifteen to twenty miscarriages, 1.

Gonorrheal Infection. In 102 patients there was a history of gonorrheal infection; positive in 72; probable in 30. Of these, 60 were married, 33 single, and 9 widowed.

Among the married the history was positive in 39, probable in 21, and in 1 was complicated with syphilis.

Among the single the history was positive in 27 cases, probable in 6, and in 1 was complicated with syphilis. Among the widows, positive in 6, and probable in 3.

A positive history of a specific infection is generally difficult to obtain, and unless the infection can be surely proved, we are not justified in making positive deductions from this standpoint. It will be seen from a study of the cases of labors and miscarriages that infection in these instances plays a very important part in the causation of inflammatory diseases of the tubes and ovaries. Thus, there were 73 cases of infection following labor and 51 following miscarriage—in all 124 cases.

Bowels. In 189 cases there was a history of constipation. 132 of the patients were married, 34 were single, 23 widowed.

Micturition. There was some complaint with this function in 214 cases. 157 of the patients being married, 38 single, 19 widowed.

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The general condition was good in 233 cases; in 159 fair; and poor in 27.

The uterus was adherent in 195 cases. 138 of the patients were married, 48 single, 9 widowed.

The bowels were adherent in 223 cases. 150 of the patients were married, 56 were single, 17 were widowed.

The vermiform appendix was removed in 218 cases. Married, 158; single, 44; widows, 21; In 89 married patients it was adherent; in 22 flexed; in 3 occluded; in 16 hypertrophied. Single: 33 adherent; 8 flexed; 2 occluded; 4 hypertrophied. Widows: 18 adherent; 3 flexed; 3 occluded; 2 hypertrophied.

It was adherent and not removed in two cases on account of an extreme condition of shock after removal of the pelvic structures, and in three cases it was not located readily, and on account of condition of patients it was not deemed advisable to make further search. 2 patients were married, 3 single.

	Cases.
The appendix was adherent in	140
The appendix was flexed in	33
The appendix was occluded in	8
The appendix was hypertrophied in	22
The appendix was dilated in	7
The appendix had concretions in	8

Structures Saved

Ovaries:

	Cases.
Right	134
Left	127
Both (80 times)	160
Right (partial)	39
Left (partial)	28
Both (partial in 10 cases)	20
Both ovaries with tubes (32 times)	64
	572

This number (572 ovaries) were saved in 419 cases; 1.34 ovaries to each patient.

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Tubes:

	Cases.
Right	32
Left	42
Both (37 times)	74
Right (partial)	19
Left (partial)	13
Both (partial) (17 times)	34
Total	214

In 419 cases, or a little more than half a tube to each patient.

Structures Saved in the Pus Cases.

Pus was met with in 97 cases out of the 419, or in 23.17 per cent.

They were divided as follows:

	Cases.
Married	60
Single.	30
Widows	7
	97

The pus as follows:

Double pyosalpinx:

	Cases.
Married	34
Single.	9
Widows	4
	47

Single pyosalpinx:

	Cases.
Married	12
Single	7
Widows	1
	20

Tubo-ovarian abscess with pyosalpinx (single):

	Cases.
Married	10
Single	3
Widows	0
	13

Tubo-ovarian abscess (double):

	Cases.
Married	1
Single	8
Widows	0
	9

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Tubo-ovarian abscess (single):

	Cases.
Married	2
Single	2
Widows	1
	5

Tuberculous ovarian abscess:

	Cases.
Married	1
Single	0
Widows	0
	1

Ovarian abscess (double):

	Cases.
Married	0
Single	1
Widows	1
	2

Structures Saved in Pus Cases.

Ovaries.	Cases.	*Tubes.*	Cases.
Right	32	Right	7
Left	30	Left	3
Both (16 times)	32	Right (partial)	2
Right (partial)	7	Left (partial)	4
Left (partial)	3		16
	104		

Thus 104 ovaries were saved in 97 pus cases, or about 1.08 ovaries to each patient. In 16 cases both ovaries were saved. 16 tubes were saved, or 1 to every six and a half patients. In these cases the following organisms were found:

	Times.
Gonococcus	10
Streptococcus pyogenes (1 doubtful)	4
Staphy. pyog. aureus	6
Staphy. pyog. albus	2
B. coli communis	4
B. mucosus capsulatus	1
Cocci in smears (no growths)	6
	33

In all, or one-third of the cases.

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In the pus cases the abdominal wound became infected seven times, or 7.53 per cent. From the infected abdominal wounds in the pus cases the following micro-organisms were isolated:

	Times.
Streptococci	1
B. coli communis	2
Staph. pyog. aureus	3
Staph. pyog. albus	1
B. mucosus capsulatus	1
	8

Micro-organisms found in abdominal wounds other than pus cases:

	Times.
B. coli communis	4
Staph. pyog. aureus	1
Staph. pyog. albus	3
Cocci and bacilli on coverslip; no growth	2
	10

The leukocyte count in the pus cases:

Highest	36,000
Lowest	3,400
Average count	17,597

Drainage was employed in the pus cases as follows:

	Times.
Abdominal alone	0
Vaginal	24
Abdomino-vaginal	4

28 times, or in 29.17 per cent. of all pus cases.

Drainage was carried out 42 times in 419 cases, or in about 10.24 per cent. of the total number of cases. Once by the abdomen alone; 5 times by the abdomen and vagina combined; 36 times by the vagina alone.

The convalescence was interrupted by the following conditions: Bronchitis in 4 cases; pneumonia in 2; pleurisy in 6; phlebitis in left leg in 1; phlebitis in left arm in 1; diarrhea in 2; stomatitis in 4; peritonitis in 2; paralysis of left arm in 2; paralysis of right arm in 1; intestinal obstruction in 1; acute gastritis in 1; perirectal abscess in 1; tonsillitis in 1;

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angina in 1; abortion in 1; rheumatism in 2; dyspnœa in 1; fistulæ—abdominal fecal and urinary in 1; abdominovaginal (fecal) in 1; rectovaginal in 1; abdominal in 1; abdominal (fecal) in 2; suppuration of abdominal wound in 37 cases. Total number interrupted, 79.

In those cases interrupted by infection of the abdominal wound (15 of which were in the pus cases), 19 of the infections were slight and two marked. Total number of abdominal wounds infected 8.56 per cent. *Number of cases requiring a secondary abdominal operation for the relief of symptoms,* 10. *Number of cases under observation on account of pelvic discomfort,* 13. *In* 10 *of these cases the symptoms of which the patient complained disappeared after one year. Three are still complaining.*

Deaths in the pus cases were 3 (or 3.04 per cent.).

Deaths in the whole number of cases (419) were 7 (or 1.67 per cent.).

Among the pus cases the diplococcus pneumoniæ was found in the secretions in the peritoneal cavity in one, together with B. mucosus capsulatus and B. coli communis.

Another patient died from the effects of a pelvic peritonitis; autopsy not allowed.

In one case there were extensive adhesions which were separated about the lateral masses and between the bowels and masses. On the ninth day after the operation the bowels could not be moved by either purgatives or enemata. On the thirteenth day the abdominal cavity was opened to find the cause of the obstruction. The small intestines were found adherent to each other. These adhesions were separated but the condition was not relieved, and the patient died the fourth day after reopening the cavity.

The four remaining cases were in the non-suppurating class.

In one there was an ectopic gestation which had involved the right tube. On the eleventh day following the operation she developed an acute obstruction of the bowels. The

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temperature and pulse were practically normal. The abdomen was reopened and the obstruction relieved, but she succumbed from shock one hour following the operation. In the second case the disease of the lateral structures was complicated by an adherent, much thickened, and contracted gall-bladder, which contained three good-sized gallstones. The opening made into the gall-bladder was difficult to close. The patient developed a localized peritonitis, which resulted fatally five days after the operation.

In the third case the pulse and temperature both began to fall after operation. The patient roused slightly, then gradually sank into a comatose state and died early the next morning.

In the fourth case a plastic operation was done, and on the fourteenth day an abdominal section was done. On the eleventh day after, patient died. For three days before death temperature and pulse gradually rose, but nothing was made out on examination to account for the condition.

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A NEW AND IMPROVED METHOD OF CLOSING VESICOVAGINAL FISTULÆ.

By A. Lapthorn Smith, M.D.,
Montreal, Canada.

According to Emmet, vesicovaginal fistulæ have become much more rare, while lacerations of the cervix and perineum have become much more frequent, from the same cause, namely, the earlier resort to the forceps. In his younger days, he said, especially in the outlying districts, the forceps were seldom resorted to until the child's head had been impacted in the pelvis for one or several days, causing necrosis and fistula at the point where the head pinched the bladder against the pubic bone. As the number of skilled obstetricians increased with the improvement in medical education, this was rarely allowed to happen. And during the latest years there were so many physicians able and willing to use the forceps, that many patients and physicians declined to wait until nature had dilated the cervix and perineum, but resorted to the forceps in order to shorten the period of labor, with the result that the cervix and perineum were much more frequently torn. No one will deny the truth of these remarks, which, moreover, are borne out by the experience of every operating gynecologist. While the writer sees a case of lacerated cervix or perineum for nearly every day in the year, he meets with a case of vesical fistula not oftener than once in four or five years. In view of the rarity of the accident and the importance of obtaining a good result at the first attempt, the two following cases

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will be of interest. The method which was employed was first published by the writer in February, 1902, although the question of priority is of very little importance.

Case I.—Mrs. H. E., to whom the writer was called by Dr. Virolle, came under his care on June 4, 1901. He was informed by her physician that she had had a very severe confinement six weeks before, the child weighing fourteen pounds, and having such a large head that, after waiting forty-eight hours, he had been obliged to have recourse to instruments, although she had four children normally before. After her delivery he found that she had a large vesicovaginal fistula, but he wisely waited until she had quite recovered and gained a little strength before calling for a consultation.

On examination, there was found a tear of the bladder, vagina, and cervix uteri, extending from immediately back of the sphincter vesicæ on the patient's right, transversely downward and backward through the os uteri on the patient's left, and measuring nearly two inches in length. The flow of urine over the raw surface had incrusted it with phosphates and somewhat thickened it. It looked as though the tear was due to the left blade of the forceps having caught the bladder and cervix under the arch of the pubis and cut it there, although it may have been caused by pressure.

With the old method, as described by Marion Sims and Emmet, this would have been quite a formidable fistula to close, and the chances of failure would have been considerable; but by following the method which will now be described, and which the writer had already employed with good success, there was not only not the slightest difficulty in closing it, but the result was most satisfactory, not a drop of urine coming through afterwards.

Operation. 1. After careful disinfection of the vagina, the latter was incised across in front of the cervix, and the bladder pushed off the uterus in the same way as in the first step in vaginal hysterectomy, only it was not quite so easy,

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on account of the tear in the bladder having become joined to the tear in the uterus, and the tissues being thickened. The laceration in the cervix, which extended up to the internal os, was denuded and closed by Emmet's method with chromicized catgut.

2. The vagina was divided in the middle line, and was separated easily from the bladder with the finger everywhere, except where the two torn edges had become united to the fistula. With the finger between the vagina and bladder, it was not very difficult to separate them by a few cuts with the scissors from one end of the fistula to the other. As this cut gave a raw edge, there was no necessity of cutting away a single particle of either bladder or vagina.

3. The long tear in the bladder was now caught with a catgut stitch at either end, only taking in the muscular wall; and the assistant holding them on the stretch, it was only the work of a minute or two to bring the muscular walls together with an over-and-over fine chromicized catgut suture, going back fully an eighth of an inch on each side, but taking great care never once to penetrate the cavity of the bladder or even to touch the mucous membrane. When this was finished there was a strong ridge on the site of the tear nearly a quarter of an inch wide, which was tested with sterilized milk injected into the bladder by a fountain four feet high, giving quite a pressure, without a single drop coming through.

4. Just as the workman who is shingling a roof takes care not to allow the joint of one layer to come opposite the joint in the second layer, so care was taken not to allow the line of sutures of the vagina to come opposite the line of sutures in the bladder. This was avoided in the following manner: The slit in the vagina was closed with interrupted silkworm gut passed through one side of the vagina, then through the muscular wall of the bladder, but half an inch to the right of the tear in the latter, and then through

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the other side of the vagina, thus displacing the bladder half an inch to the patient's left, so that the line of suture in the two membranes was no longer in the same place that the line of the tear had been. By this means the line of suture in the bladder was backed up or strengthened in front by half an inch of solid vagina instead of a line of sutures, and should any pressure accidentally be brought to bear upon the sutures in the bladder, it would have to overcome a valve instead of a hole, so that the harder it pressed the tighter would the valve close. It was fortunate that this was so, for the *catheter à demeure* which was left in the bladder became clogged by a clot of blood, and some eight or nine ounces had accumulated in the bladder before Dr. Virolle's attention was called to the fact that no urine was coming away. He immediately removed and cleansed the catheter and reintroduced it, after which there was no further difficulty. The catheter was left in for five days longer, after which the patient passed her water naturally four or five times a day, and has had no trouble since. I saw her only once after her operation, when I went with her doctor on the tenth day to remove the vaginal stitches, after which she went about her household duties, as well as ever.

Case II.—The second case which the writer wishes to report was that of a Mrs. V., referred to him by Dr. Sylvester, with the following history: She was twenty-four years of age; had begun to menstruate at eleven; married at eighteen and a-half; mother of two children, the last one a year ago; no miscarriages; first labor, child only two and a-half pounds, and very easy labor; second child weighed fifteen pounds, and labor was very difficult. As the head made no advance after twelve hours of severe pain, Dr. Sylvester applied forceps, immediately after which she began to have incontinence of urine. For the sake of the child he waited until the latter was weaned before sending her for operation. On examination she was found to have a small fistula halfway

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between the cervix and the urethra, about the size of a lead-pencil. She was admitted to the Samaritan Hospital, and was operated on by the method described in Case I.

The *catheter à demeure* was used in Case II, and as the patient was in the hospital, it was possible to watch it more carefully than in Case I, which was done at home, and without a trained nurse being in charge of her. The catheter was removed and washed twice a day, as it took only two or three minutes to do this. The operation was exceedingly easy, taking only about ten minutes for its performance, while the result was all that could be desired. She left the hospital perfectly cured at the end of ten days, and has had no trouble whatever since.

The writer desires to call particular attention to three points: (1) By the method above described, no stitches are allowed to enter the bladder, thus avoiding the danger of forming the nucleus for a calculus; a rather frequent accident by the old method. The bladder mucous membrane is brought together by the drawing together of the muscular layer right beneath it. (2) Instead of depending upon the union of a narrow edge about the thirty-second of an inch thick, we obtained a thick ridge fully an eighth of an inch thick in the bladder alone, to say nothing of the thickness of the vagina in front of it. (3) The great importance of leaving in the *catheter à demeure*, which should be used in every case in which anything has been done to the bladder-wall, as it removes all tension, and places the bladder at complete rest as long as it remains in.

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PROGRESSIVE OPERATION FOR LARGE VESICO-VAGINAL FISTULÆ.

By Malcolm McLean, M.D.,
New York.

Happily in these days we are not so frequently as in former years confronted with very extensive destruction of the vesicovaginal septum. Indeed it stands to the credit of the improved methods of modern obstetrics that these fistulæ are comparatively rare nowadays, for—by proper recognition of the main causation of the accident as demonstrated by Dr. Emmet several decades ago—obstetricians have avoided those conditions which contribute to the mishap and we no longer meet with long lists of fistulous cases even in the larger clinical fields of practice.

But, occasionally, even now, we are called on to give relief to those unhappy women who, having survived great dangers in an unfortunate puerperal state, are doomed to go about with all the disgusting miseries entailed in the loss of the integrity of the vesical walls to a greater or less extent.

It is not intended, nor desirable, in this very brief paper to enter into any details as to symptoms, etc., presented by this accident; nor is it within its scope to speak of the ordinary cases of vesicovaginal fistulæ, together with the various methods used for restoring the tissues to usefulness.

The direct object of the writer is to call attention to a few points of practical value which should be kept in mind when dealing with those cases which seem almost hopelessly deformed by the great extent of the lesion.

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We all know the formidable conditions obtaining in a case where the septum is so extensively swept away by the necrotic process that a hernia of the fundus of the bladder with superimposed intestines takes place through the fistula. The red and irritated mucosa of the bladder bulges down into the foul and septic vagina, and the ureters trickle their constant supply of urine over the vaginovulvar tract, ever adding to the stream, which reaches the thighs in an ammoniacal ferment of discomfort and disgust.

The difficulties of closing such a case are known to all of us, and many cases have been passed on from surgeon to surgeon, from hospital to hospital, doomed at last to drift away among the incurables, with their malodorous emanations pointing out too loudly the limitations of the surgeon's art. It is to the genius and painstaking labors of Sims and Emmet that the world today owes an enormous debt of gratitude, for by their work so well conceived and so well executed the surgeons of all nations have been taught that this horrible misfortune, which had made thousands of women miserable, can be cured in the vast majority of cases.

Our profession must never lose sight of those years of pioneer work in this department which, with unflinching and heroic patience, Dr. Thomas Addis Emmet pursued, making easy the path for those of us who were to follow in his footsteps. It is more in the way of endorsing the principles laid down by Dr. Emmet several decades ago, than an attempt to offer anything new in the treatment of these fistulæ, that the writer makes this limited contribution in the discussion of the subject before us.

In order to restore a vesicovaginal septum which has been extensively destroyed, it is well to bear in mind the mass of cicatricial tissue which surrounds the fistula and the intolerance of great tension at sutured points.

Having secured the best possible condition of the tissues by attention to the urinary and other excretions, by the frequent use of hot water douching, etc., the first step should be

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to ascertain at what point a considerable line of coaptation of tissue can be best accomplished. By picking up the vaginal edges of the fistula on two tenaculæ at different points of the periphery and drawing them together gently, it will be discovered that at one or two certain angles an approximation may be more easily made than at any other. Selecting such an area for immediate closure and *limiting our operation* to just that area and *no more*, we should set about to denude the edges between the two points selected and unite them carefully in the usual manner with either silver wire or silkworm gut.

After union has been safely secured and the sutures removed the same steps are taken to mark out a new area for the next operation.

It is especially desirable to note that it is better to close *one-tenth* of the fistula at a sitting and *succeed*, than to close eight-tenths and *fail* in a considerable extent of the line of suture. For in extensive lines of denudation there is a loss of tissue which cannot be spared in these great cases where the floor of the bladder has been so greatly sacrificed already; and every centimetre of *failure* means just that much shrinkage in our resources for future work of rebuilding.

On the other hand, uniting a very limited portion of the lesion without tension, and without cicatrix resulting from failure, really *adds* to our tissue by contiguous trophic development, the result of the stimulus given to the adjacent circulatory changes. At one or more points it may be found that traction of the tenacula develops a pucker of the tissues, showing a cicatricial inequality at this or that angle or fold. In such a case, a short incision may be made several centimeters distant from the edge of the fistula, and parallel to it, down through the vaginal tissue, loosening up its edges so that the incision thus made may be closed by passing the sutures in such a way that the line of sutures shall be at *right angles* to the edge of the fistula. This

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procedure will relax the position which was tense before and will permit the usual suturing of the required area of the fistula itself.

This gradual and repeated operation will result in actual growth of renewed tissue, so that at no time will dangerous traction of the sutures be found necessary. Moreover, it is much easier by this method of procedure to avoid injury to the ureteral openings and intolerable irritation of the viscus by badly developed cicatrices.

Inasmuch as many of these operative steps may be done under local anesthesia (interstitial injection of weak cocaine solution) the patient will seldom object to repeated operations. One of the difficulties of operating on these large fistulæ is the tendency to protrusion of the inverted bladder wall into the field of operation. There is considerable mechanical difficulty also in steadying the septum for denudation and suture, especially in those cases where the lesion extends from the urethra to the vicinity of the cervix uteri. Troublesome hemorrhage also makes every step tedious and difficult in certain cases where the cicatricial tissue is found blended with the vesical mucosa.

The writer has found valuable assistance in overcoming these difficulties in the use of an ordinary French rubber toy balloon, inserted into the bladder through the fistula and then injected with sufficient warm Thiersch boro-salicylic solution, to distend it as large as needed to secure it *in situ* while traction is being made upon it so as to bring it firmly against the edges of the fistula from within.

By this means the base of the bladder may be drawn down and steadied while the necessary denudations are being made. Hemorrhage is controlled to such an extent that the introduction of sutures is rendered much more easy and the fundus and other walls of the bladder are held safely out of the field of operation. Also, the escape of urine is stopped while we are denunding and suturing.

These French rose balloons may be bought for a few cents

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a pound in the large cities and in their uninflated state will last for years. The writer usually attaches a short glass junction tube to connect a strong rubber tube eight or ten inches long with the balloon, the tube serving as a traction handle in holding the distended balloon in place in the bladder.

Silver wire is the best suture material generally, as its free end can be safely braced against the vaginal surface, as no other suture can, and the tension of each suture can be more easily regulated.

Finally, when a tremendous gap in the vesicovaginal septum shall have thus been reduced to a mere perforation, the usual difficulty will be met with in closing that last remaining insignificant leak. But, by carefully denuding enough vaginal surface and carrying the middle suture directly through the centre of the perforation, we shall generally bring to a glorious termination an operation which stands pre-eminent among the great achievements which American surgery—American surgery of the gynecological sort—has given to the world, wherewith surgeons of every clime may today bless the lives and relieve the sufferings of women.

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THE PARTURIENT PROCESS IN PRIMIPARÆ OF ADVANCED AGE.

By Robert A. Murray, M.D.,
New York.

First pregnancies in the late menstrual life from forty to forty-five and even fifty years of age are not common and are a cause of great anxiety to both patient and accoucheur.

This anxiety proceeds from the danger to the patient's own life, from the frequently fatal result to the child from the fear that if the child is lost and the mother survives that a second pregnancy with its dangers is not probable or possible, and lastly from the fact that often the social and financial position of the father are seriously affected by the absence of progeny.

A study of the parturient process in advanced primiparæ is therefore needful, so that when opportunity presents we may be prepared to meet the condition and complications successfully.

Multiparæ who have had a number of children do not run the same risks, nor are they liable to as many complications as primiparæ. The previous confinements have developed and enlarged the bony pelvis, the soft parts are more yielding, the pains are more apt to be regular, sustained, and efficient, and the patient does not enter the parturition with the same dread; she aids the pains more fully by the accessory muscles of parturition.

The bony pelvis in advanced primiparæ I have not found seriously distorted, but it is likely to be small for the size of the child, justo minor or flattened, with firm, rigid coccyx

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and narrow pubic arch interfering with the completion of the second stage of labor.

The relaxation of the sacro-iliac synchondroses is very slight and the whole pelvis more rigid, preventing the entrance of the presenting part; indeed, it is always of good portent, when the head descends into the pelvis during the last month of pregnancy, the labor being thereby much easier. The soft parts, cervix, uterus, vagina, and perineal floor are almost always rigid, unyielding, and with difficulty dilatable, so that labor, frequently delayed in the first stage, is often complicated by laceration of the cervix, the perineum being often lacerated through its rigidity and the operations necessary to delivery.

The uterine contractions are slow, inefficient, and cause a very delayed first stage, often complicated by early rupture of the membranes, and necessity of manual or instrumental dilatation. The patient is frequently worn out by the pains and has to be aided by operation, so that first labors in this class of cases are very often instrumental, forceps, version, etc., being required. The position of the child and presentation are very often causes of difficulty in the labor and danger to the child.

Transverse presentations are more frequent; when the head presents it is often more difficult to cause it to enter the pelvis; occipitoposterior positions are frequent and exhaust the patient through the long labor necessary to rotate the head, or if the head rotates into the hollow of the sacrum, delivery is rarely effected without the aid of forceps.

The child is also apt to be large, a majority of the children in my practice have been from eight and one-half to ten pounds; thus the circumference of the child's head is too large for the pelvis in many cases, requiring careful study of each patient as to the continuance of pregnancy or its interruption by premature labor. Also when labor is going on the choice of the proper operations to deliver a live child—forceps,

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version, Cesarean section—is often a matter requiring judgment, skill, and large experience in operative midwifery.

As eclampsia and the different toxemias of pregnancy are more frequent in primiparæ, generally in primiparæ of an advanced age we find an unusually large proportion, as the kidneys and heart are not in as good condition as earlier in life, the walls of the abdomen less relaxable, the arteries are more apt to be injuriously affected by the strains of labor pains, and cerebral apoplexy has twice caused death in my patients after labor.

I have met placenta previa but twice in the limited number of patients, and the rigid cervix uteri made the management of the cases anxious and difficult, though both mother and child were saved in both instances.

The third stage of labor is frequently delayed by the inertia of the womb. Postpartum hemorrhages are apt to occur. In one of my patients a slight but sudden postpartum hemorrhage caused death after eclampsia and safe delivery of the child by forceps, the uterus rapidly relaxing, though the nurse had the hand on the womb. Such patients should never be left until firm contraction has resulted after delivery, particularly when anesthesia and instrumental or manual delivery have been necessary; and I always give a drachm or more of extract of ergot and see that it has acted before leaving the patient.

In illustration of the foregoing statements I will quote briefly the histories of a few cases:

Mrs. F. B. B., primipara, aged forty-four, married one year to a man of seventy-four; she is his second wife. Patient stated that she would not have married if she thought pregnancy at all possible. Consulted by her at the fourth month, I found her pregnant, with a normal pelvis, except that the coccyx was bent forward and fixed; external parts small, tissues rigid, urine normal. When labor set in there was a sudden suppression of urine, which up to this time had been normal; eclampsia resulted, which was controlled by veratrum

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viride—but again coming on, and efforts to make the kidneys act being fruitless, chloroform was used, the os dilated manually, the occipitoposterior position of the head was made by version a breech, and the child extracted by forceps to the after-coming head. The child alive weighed nine pounds and was strong and vigorous. Convulsions did not return, but the mother was stupid for three days, until free catharsis and diuresis with saline enemata relieved the toxic condition. The patient was well up to the ninth day, when a sudden embolic attack caused her death in a few minutes. There was no heart lesion or strain other than the eclamptic seizure which had been controlled at the second convulsion; but there was great tension of the circulation, causing fulness of the head, which the veratrum viride relieved. Swelling of the limbs, headache, restlessness, or changes in the urine were not present; and no albuminuria or diminution of the excrementitious matters in urine observed previous to the eclamptic seizure, the urine being examined every few days.

Mrs. A. C., aged forty-two, primipara, married two years, I saw in consultation with Dr. V. in May, 1900, at term. The patient was in convulsions, the history obtained that she had eaten a full meal which brought violent emesis During the vomiting she was suddenly seized with convulsions. A large, very fleshy woman, face turgid, limbs edematous, but an examination of urine four days before showed no change. Vaginal examination showed labor imminent, but the cervix was rigid, dilated to size of one finger; head left, occipitoposterior. Chloroform relieved convulsions, an effect prolonged by an enema of 30 grains of chloral hydrate. The os uteri was dilated manually and by Barnes dilators until of sufficient size to allow of bimanual version. The membranes ruptured, and as no convulsion occurred extraction was done slowly, forceps applied to after-coming head, and a live child was delivered, which slept for two days, evidently poisoned by the toxemia of the mother. The

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laceration of the perineum was repaired; the uterus contracted fully though the third stage was slow, and the patient was left in charge of Dr. V. In about two hours the nurse, sitting by the bed, noticed gasping breathing and the uterus was found relaxed but only a moderate hemorrhage. Dr. V. with strychnine and other powerful stimulants failed to revive the patient, and she died suddenly of edema of the lungs, two hours after delivery.

Mrs. G., aged forty-three years, second wife, married nine months, a short, stout woman, always well. I saw her in consultation with Dr. W. for a delayed labor in progress for two days; pains every twenty minutes, but weak; pelvis slightly cordiform, projecting sacrovertebral promontory, and projecting inward of pubes. The subpubic arch narrow. Head at superior strait, not entered. Left occipito-posterior position; anteroposterior diameter of brim three and one-half inches, oblique four and three-quarters. Inferior strait narrowed, cervix uteri rigid, long, admitting one finger; vagina and perineum firm, unyielding, feet and limbs edematous, child's heart 140 on auscultation. Manual dilatation of cervix was done until os uteri size of half-dollar and patient left for three hours. Pains increased and cervix softened, so that at the end of this time patient was put under chloroform, the cervix was completely dilated with fingers and Barnes' dilators, became soft and yielding. Podalic version was then performed bimanually, forceps applied to after-coming head; the head being brought into the L. O. A. position a live child was delivered in one hour. The right arm having gone up at the side was pressed on firmly by the head and was paralyzed for three days from the pressure applied to deliver it; but this recovered entirely. The perineum and pelvic floor were lacerated to the second degree, but healed rapidly after the immediate operation for repair. The child had one convulsion the evening of delivery; this was relieved by an enema of bromide of sodium, and it is now alive and well.

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In a recent second delivery of the same patient, now between forty-five and forty-six years of age, we had the same inertia uteri; first stages lasting two days, the child being dead; the cervix dilated to the size of a finger, when the cord was found prolapsed and was returned; no pulsation. Head in R. O. P. position, manual dilatation in three hours softened and dilated os so that forceps applied at the superior strait by slow traction brought the head to the inferior strait and rotated it forward and delivery was accomplished without laceration. The child weighed seven and one-half pounds, about a pound less than the first one. The amniotic fluid was filled with meconium, and the flaccid cord showed signs of compression, no other cause being discernible for the fatal result to the child. The urine during the whole of the pregnancy was of low specific gravity (1010 to 1016), had from a trace to a marked amount of albumin, but was always very abundant; no headache, emesis, or other symptoms of uremia, and no casts in repeated examinations; the convalescence was uninterrupted.

Mrs. McQ., May, 1904, aged forty years, primipara. Large, well-developed, muscular woman. A normal pregnancy, no albuminuria, bowels regular. Anticipating a very large child, after examination at the fifth month, the carbohydrates, fats, and proteid articles of diet were much reduced. Labor May 23, 1904, waters broke prematurely; head engaged at superior strait R. O. P.; cervix dilated to admit one finger, rigid. Pains every twenty minutes, but after six hours cervix only dilated to size of quarter of a dollar. The pains were inefficient though causing much suffering, the os softened, and in three hours, aided by the Barnes dilator, the cervix was dilated to three inches in diameter. The head being large, the waters having broken nine hours before, and the child alive, though firmly grasped by the uterus, chloroform was administered; manually the cervix fully dilated and a slow delivery, to allow of molding of the head, was performed with axis-traction forceps;

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the head was rotated to R. O. A. and delivered with laceration of the perineum to the second degree. After immediate repair it healed thoroughly by the tenth day. The child, a boy, was alive, and weighed eleven and one-half pounds. After delivery there was a severe hemorrhage; hot douche, ergot, and pressure by the hand, the latter being employed for an hour. Though the mother did not seem to be generally exhausted, the ergot, in half-drachm doses of Squibb's fluidextract, was administered every four hours for a day, when the uterus remained contracted and the convalescence was uninterrupted. This patient is again pregnant to the fifth month.

Mrs. H., May 2, 1906, aged thirty-nine years, married fifteen years, primipara, a very stout woman weighing 190 pounds, pregnancy normal, marked edema of limbs and shortness of breath, a flattened pelvis, the diameters being normal from its large size. There was the same inertia uteri, frequent pains causing suffering, but inefficient; a very rigid cervix, tardy dilatation, necessitating manual aid; L. O. P. position, early rupture of waters before full dilatation of cervix was accomplished. The labor was completed by manual dilatation of the cervix, and after head had molded, axis-traction forceps were applied and a slow delivery effected, under chloroform, without laceration of perineum. Ergot was administered, as the head had reached the perineum; but the inert uterus responded feebly and the hot douche had to be employed, and ergot exhibited during the following day; the child weighed nine pounds, head very much elongated. Child, a girl, alive, and convalescence of mother normal.

Without narrating more cases, we have shown that parturition and the pregnant state in advanced primiparæ are fraught with serious dangers, more so than in the younger primiparæ; that the pregnancy should be followed closely, and the diet, exercise, and actions of the emunctories carefully studied and corrected. In a number of instances, I

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have been greatly pleased by modifying the diet in preventing excessively large children and at the same time preventing toxemia from inefficient action of both bowels and kidneys. Copious drinking of a pure water and restriction of the amount of albuminous, starchy, and fatty foods prevent the formation of toxins in the alimentary canal and eliminates them by the skin and kidneys. Frequent examinations of the urine should be made, and the amount of waste matter, urates, uric acid, etc., be determined in proportion to the weight of the individual, the food, and exercise. The skin should be kept active by frequent bathing and exercise, and in stout people massage is beneficial.

An early examination of the pelvis and determination of its diameters and the condition of the bony and soft parts is essential. The fetal pulse should be auscultated frequently, and if very weak, premature labor instituted. The case should be seen early in labor, to correct, if necessary, wrong presentation or positions of the child, which are frequent, since the soft parts are rigid, not easily dilated; manual and instrumental dilatation are often necessary, but rapid delivery by either forceps or version avoided unless complications imperatively demand it. The slower extraction allows of molding of the head, giving the child greater chance of life, and the more gradual dilatation of the soft tissue prevents lacerations.

Postpartum hemorrhage is frequent from the inertia of the uterus and exhaustion from delayed labor, especially if complications demand rapid delivery; assistants and means of combating this complication, as hot douche, ergot, saline enemata, etc., should be ready, so that no risk may be incurred by the mother while obtaining assistance.

Eclampsia is frequent in my experience and should be promptly treated both before and after labor; and if the uterus has to be emptied quickly, care should be taken not to cause severe shock or laceration of tissue. I believe that all laceration should be immediately repaired, so that

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the risk of septicemia be reduced to a minimum. It is almost unnecessary to add, that in all labors, but particularly where examinations have frequently to be made and operations performed, strict aseptic methods should be carefully followed.

Prolonged rest, the careful control of the diet, and the use of eliminatives by skin, kidneys, and bowels are necessary to free the system from toxins and to relieve the tension of the circulation, so that the patient may have a thoroughly uncomplicated puerperium.

The child from the prolonged pressure, during labor, and that occasioned by the use of the forceps, also from the frequent toxic condition of the mother, is not vigorous, and the prompt employment of artificial respiration, the application of heat and cold, and rest after breathing and circulation have been fully established, to induce recovery from exhaustion, will be found necessary to ensure its safety. I have usually had the child kept warm by hot bottles and fed freely with hot water, which seemed to stimulate the circulation and increase the action of the kidneys, thus aiding in eliminating the toxic elements absorbed from the mother. The most strenuous effort should be made to save the child since as before stated it may be the only one that the mother could possibly have, and it should nowise be neglected. While looking after the serious state of the mother an intelligent assistant should be on hand ready to care for the child at its birth while the accoucheur takes charge of the mother. A faithful and efficient nurse is of great service in nourishing and caring for the infant, and undoubtedly contributes greatly in diminishing infant mortality.

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THE FETICH OF THE OVARY.

By Ely Van De Warker, M.D.,
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When accessory organs are taken out of their subsidiary position by the surgeon and given a determining function that controls all other organic life it is about time that physiology and pathology from the surgeon's standpoint should be given a careful review. About this we gynecologists are sadly at fault. We know nothing of physiology. Many as have been our opportunities of studying the physiology of organs that give us the most concern, we have absolutely neglected them and we stand to-day in the position of thirty years ago.

With this paper in view I have been over some of the text-book literature. Of clinical physiology there is a little of no special value, of demonstrative physiology there is absolutely nothing. Here is a virgin field for someone to exploit.

It is due to this want of knowledge that, surgically speaking, we have been led into many errors. It was this ignorance that caused the false position of Battey and the evil influence of Tait. It has lead Fellows to make assertions at our annual meetings, and of whom I am one, that we have been obliged to retract. It is about time that we called a halt and looked the ground over carefully. The science of gynecology, if it is a science, has been in existence too long for us to plead ignorance of the physiology of the few organs involved in our special work.

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Let us confine our inquiry to a single organ, the ovary. I do not claim that I know any more about the ovary than any other Fellow here; as a matter of fact I have no doubt that there are many here who know more than I. What I know of the ovaries is drawn from their clinical relations and dual functions as we are able to interpret them. These are within the experience of anyone who will take the trouble to observe them. But this at the best is only superficial knowledge; for, unfortunately, as we know but little of sexual physiology I must appeal to clinical experience.

An almost universal explanation of pelvic pain in women is inflammation of the ovaries. The left-sided pain so commonly complained of is usually explained to the patient as due to this cause. The extent of this painful area is from the pubic ramus to above the anterior superior process. Its usual seat is about midway in the iliac fossa, a region in which the ovary is never palpated. Another painful region is from the crest of the ilium to the lower costal border on the left side. How this can be brought within the limits of ovarian influence it is difficult to say. The common error is to confound an extension of pelvic peritonitis to the fossa with an inflamed ovary. We may have a high degree of pain and tenderness at this point with a minimum of uterine fixation and with no very evident mass. To confound ovaritis with inflammation of its peritoneal envelope is simply a state of mind. The great rarity of inflammation of the ovarian stroma and the frequency of limited peritonitis at the open ends of the Fallopian tubes ought to cause a discrimination in the choice of terms. There are no figures that are reliable concerning the frequency of inflammation of the ovarian body, but that it is seldomly met with we all know; while peritonitis at or about this region is placed by some authors as high as 50 per cent.

Uncomplicated parenchymatous ovaritis is not a painful disease. It is comparable to that of an orchitis or epididymitis when well supported and the patient bed-fast. The

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termination of ovaritis in abscess is very rare. In forty years I have never seen a case. The organ can lie in a bed of pus without its substance being involved. It cannot be palpated with any more certainty than the normal organ. These organs are subject to periodical congestions, the pain of which is rarely referred to this region, but is central, sacral, or cerebral.

How frequently has castration, within the experience of all of us, failed to relieve the painful psychosis which we so confidently referred to the ovary. In the localized subjective sensations of woman it plays but a minor part. Idiopathic inflammation of the ovarian intima is so rare that it has no place in even the most elaborate treatises. Kelly and Pozzy give it no place, and yet "inflammation of the ovary" is a stock phrase. Gonorrhea is probably the severest pathological trial that the female pelvic organs can be subjected to. We do not find that the ovary takes part in the diseased process. The tubes and the cellular tissue of the fossa receive the damage while the ovary escapes. The painful sequela are largely credited to the ovary while adhesions and the contraction of evacuated abscess cavities are alone at fault.

Small multiple cysts of the ovary do not appear to give rise to any symptoms. Thousands of ovaries have been sacrificed on their account. The ovaries in any woman who has menstruated twelve or more years are battered, wrinkled appearing organs and it needs some experience to enable one to say that they are normal. We know enough to conserve the organ, but we must not suppose that the day has passed when the normal organ is not ablated. In view of the importance of the ovary its removal is ridiculously easy and in the country it is a stock operation to-day. The woman has had these little organs so long accused of being the source of her abdominal pain that she is prepared to believe everything bad that may be said about them and is only too willing to have them removed.

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It is difficult to explain how the average medical mind can explain all pain in the lower abdominal segment as due to the ovary. If the physician will carefully palpate as low down as the pubic ramus will permit and then try and recall how seldom he has ever had the patient complain of tenderness in this region he will realize how rarely the ovary is the cause of pelvic pain and never of the abdomen. If physicians are not befogged as to the position of the organs why is appendicitis so frequently mistaken for ovaritis and tubal inflammation in young girls? In sixty cases tabulated by Dr. Hooker, of Australia, forty were so mistaken. How frequently the ovary has been removed for this cause is a never to be written chapter in the tortuous history of gynecic surgery. The shame of ablating an organ almost vital in its moral reactions for a disease that a dose of castor oil might cure is put upon us, and it must be borne.

The frequency with which the ovary becomes disorganized by extensive new-growths without giving rise to pain or other subjective symptoms is well known. In the history of ovarian cysts that I have examined, women have applied to me for an explanation why large growths were accidentally discovered in the fossa while giving care to their persons and without any suspicion that extensive disease was developing. This can be said of no other pelvic neoplasm, unless it is of the early stage of a cervical epithelioma. The nervous endowments of the ovary are not of a high order. Its nerves belong more to the trophic centres than to the sensory sulcus of the cord. It may be that this is one of the reasons why cystic multiple degenerations and extensive destructive diseases may go on with so few subjective symptoms.

In a critical review of a subject closely allied to this, our colleague, Dr. Coe, says: "The reaction against the wholesale extirpation of normal or slightly cystic ovaries which occurred many years ago was succeeded by a general resort to conservative surgery, which, though a long step in advance, was

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itself carried to extremes. The same ovaries which were formally removed were punctured, burned, resected, and otherwise tampered with when (as we now know) they had better been let alone." Concerning intermenstrual pain he quotes Rosner (*La Gynécology*, June, 1905), "Who, after reviewing the various theories that have been advanced, concludes that this phenomenon is really a pelvic neuralgia without demonstrable lesions, most common in arthritic subjects." Dr. Coe concludes this able review by saying, "We have referred to this subject because it was formerly held (and some observers still claim) that this symptom is always associated with cystic disease of the ovaries, and is, therefore, an indication for operation." I could cordially agree with all that Dr. Coe states if other organs than the ovaries could be brought within the sphere of neuralgic disturbance. I do not deny the existence of neuralgia of these organs, but I do make the claim that it is so rare that as an explanation of intermenstrual pain it may be regarded as negligible.

Importance is given to misplacement of the ovaries as a cause of menstrual and intermenstrual pain. I believe that the ovaries like the uterus have no fixed normal position. We will sometimes find an ovary adherent to the wall of a neoplasm and carried up to the level of the umbilicus without a suspicion of its presence there, its migration having caused no subjective discomfort to the woman.

The mobility of these organs is their factor of safety. In pregnancy, new-growths and postural changes, this endowment preserves their function and structure from damage. Great importance was given at one time to prolapse of the ovary as a source of pelvic disturbances. Many yet so believed to the extent of opening the abdomen to suture the organ to what they regard as a normal position. The late Paul F. Mundé invented an ingenious pessary to correct the position, but it proved a failure. So little disturbance is caused by the descent of the ovary into Douglas' fossa

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that I believe that it is better let alone. I have known the ovary lift itself out of the fossa. If, however, the altered position of the ovary, from its approximate normal, apparently gives rise to symptoms it is due to the condition of the parts about the organs.

Tendinous adhesions attaching the inner genitalia to one another, or to its environment of bone, keep up a fret and tenderness that require a careful discrimination to attribute them to their true cause. None of the conditions require an operation for their removal. Pelvic massage, sitz-baths, graduated exercise, and treatment to promote as high a degree of health as possible are better than operations. These intra-abdominal operations in weak and anæmic women are sometimes badly borne and leave the woman in a worse condition than she was before.

The palpation of the ovaries in their usual position, the so-called normal, has been referred to in text-books, which claim that it can be easily done. If it is such a sure and easy manipulation, is it not a little strange that no two authors appear to agree on the method of palpation? Kelly's method would appear to be as certain as any, but it would be prohibitive in the virgin and that large class of subjects with contracted vaginæ. There is no doubt that the authors of text-books are obliged to take positions that the practical man finds to be difficult or impossible at the bedside. I do not believe that it is possible in the majority of cases to palpate the ovaries understandingly without an anesthetic. Even with that aid in the fleshy subject it would be difficult to assure yourself that you had the ovaries under your fingers. The muscular resistance of the abdominal wall of some young and powerful women is enormous. Anesthesia to its limit is required to obliterate it, and even then it is difficult to feel certain. It is just as easy to think that you feel a thing as to think that you see it. Self-deception is so easy in the difficult diagnostic examination of the pelvis that it is pardonable to the physician and worse to the surgeon.

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This continuous clamor about the ovaries has its sociological reflex. The attitude of women toward mutilating operations is a strange one. It will in no manner explain her mental status to say that some doctors are careful, learned men and others careless and ignorant. I have always said that every community has the physician that, from the moral and intellectual standpoint, it deserves. This apathy pervades refined and wealthy communities which are served by the highest professional talent; while among the poor and ignorant the physicians come from the same rank. The truth occupies no middle ground, but pervades all grades of the profession, both learned and unlearned. All alike appear to be equally ignorant of the palpable location of the ovaries, of their relations toward intrapelvic disease, of their value to the individual and to the community.

A woman's ovaries belong to the commonwealth; she is simply their custodian. Without them her life is stultified. Making a guess at figures, I believe it to be within the mark to say that the one hundred and fifty thousand physicians of the United States have sterilized one hundred and fifty thousand women. Some of this large number have openly boasted, when the lunacy was at its height, that they have removed from one thousand five hundred to two thousand ovaries. Assuming that each one of these women would have become the mother of three children we have a direct loss of five hundred and fifty thousand for the first generation and one million six hundred and fifty thousand in the second generation. I believe that these figures approximate the truth. If we accept the proposition that 10 per cent. of this aggregate represented necessary and helpful surgery we have the truth from my standpoint as closely as it can be stated.

I have yet to see the woman made better in health by the removal of the ovaries. I have scrutinized my own cases most carefully and the after-results gave rise to a growing

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suspicion that the ablation of the so-called diseased ovaries was the result of a blunder in physiological surgery. Dr. Battey's operation led to a flurry of surgery founded upon ignorance of the relation of these organs to the functions of the body. The anemic neurotics which the operation was supposed to cure needed more ovarian substance instead of none at all. Like a case of thyroidism in which there is a deficiency, or perversion, of the internal secretion to the gland; so in these cases the internal secretion, or influence of the ovaries upon the body, was either perverted or below the systemic demands. Clinically, this has been verified by many of us. There is this to be said, however, concerning the difference in the reaction between ovarian and thyroid extract, the reaction of the latter is rapid while that of ovarian extract is exceedingly slow. Results will follow if the use is persisted in. The anemia will diminish, the neurasthenia will lessen, and the patient will begin to grow in body weight. After oophorectomy we have nothing left but the growing intensity of the train of evils for the imaginary relief of which the operation was made.

The sociological relations of the mistakes about the ovaries have been brought into the daily life of women. So constantly have they been held up before her as the one evil spot in her anatomy that she has grown to look with suspicion upon her own organs. Neither the patient nor the average doctor think sanely on this subject. The operation is unfortunately a minor one of few if any difficulties, and with a death-rate so small that it may be neglected. The woman appears to give the same value to her ovaries as that doctor does to the danger of the operation. The result is that we have an over-willing surgeon and a pliant patient. If the doctor would call up his experience before operating and the woman, be properly instructed about her sexual life, the surgery of this region would begin to hold a normal relation to the community.

In this connection, while preparing this paper, I have

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examined a large number of popular books designed to instruct women, and the authors ignore this topic. Of course, this omission is in the interest of trade. But some time we will have an inspired author who stands in no fear of either the doctors or the reviewers who will give to women the instruction they are sadly in need of. Surgeons will quickly follow the popular demand.

Reforms in medicine have always come from without the profession, I am ashamed to say. In the old days calomel was used to salivation and bloodletting to exsanguination. The people rebelled and quasi-medical organizations were created to combat it. We have the same reform going on in regard to appendectomy. There are not five cases operated upon where there were twenty, five years ago. It was ridiculed and laughed out of court. There was so little science about it that it could not survive ridicule. The same thing will correct the evil of indiscriminate ablation of the ovaries. I will not ask the question with any expectation of an answer; but why can we not make correction and reforms based upon broad intelligence and scientific insight within our own ranks?

I submit the following tentative conclusions not for the purpose of gaining your assent but for the purpose of bringing my views concisely before you:

1. Undue importance is given to so-called inflammation of the ovaries.

2. The ovaries, notwithstanding their widely diffused physical and psychic influence, do not have the paramount reflex power generally accredited to them.

3. Inflammation of the ovarian stroma is an extremely rare disease attended with but little pain and quickly recovered from without sequelæ.

4. Any pain in the lower abdominal zone is generally explained by general practitioners and even by gynecologists as due to inflammation of the ovaries.

5. Women have been induced by the insistent picture of

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alleged ovarian disease to give undue importance to these organs.

6. The position of the ovaries in the pelvis is a minor matter and unattended by either functional or sensory symptoms, and are due to other pelvic conditions.

7. Palpation of the ovaries, when in a normal position, is a difficult technique, only accomplished with certainty in thin subjects with lax abdomens or under an anesthetic.

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ANESTHESIA IN THE FIRST STAGE OF LABOR.

By Franklin S. Newell, M.D.,
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There is probably no branch of medical practice in which tradition plays so prominent a part at the present time as in obstetrics. The fact that in normal women childbearing is a natural process, and that departures from the normal should be rare exceptions, has given rise to a general impression that interference with the course of labor is, to say the least, inadvisable until definite indications arise.

The teaching of obstetrics at the present time, if one can believe the modern text-books on the subject, deals only with the care of the natural woman in pregnancy and labor, and entirely overlooks the evident fact that the highly civilized woman of our larger cities is an abnormal product, and is no longer the natural woman that is taken as the type on which all teaching is based. It follows naturally, therefore, that many conclusions which are based on the assumption that the conditions of practice are not subject to change, and that we are dealing with the same class of patients as those on whom the original observations were made, must be false when applied to the over-civilized women of our modern society. The life which is led by the average society woman of to-day, from the time her education is begun, instead of preparing her for the burdens of her mature life, distinctly tends to unfit her nervously for the strain which is attendant on pregnancy and labor. The natural result follows, that, with the increased nervous instability shown

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by the increase in nervous breakdown among young girls and women of this class, the power of standing pain has become diminished, and the reaction to pain of even moderate degree distinctly increased. The result of this unnatural sensitiveness to physical strain is, that we find an increasing number of women who are nervously broken down for a longer or shorter time after their first pregnancy, or who, if they come through the strain without a definite breakdown, nevertheless say that the suffering has been such that they are unwilling to undergo the ordeal a second time.

It seems to me that these results follow naturally on the general teaching that labor is a physiological process, and must not be interfered with until symptoms arise which render relief imperative and that these results will be found in a steadily increasing ratio until the profession can be made to understand that the over-civilized modern woman represents a new type, and that the practice of obstetrics must be changed in order to meet the new conditions which have arisen.

We must recognize that complications during and following labor among society women are constantly on the increase, and that to avoid these complications, the causes must be removed, as far as possible. The teaching that the pain of labor must be borne until nature fails to give relief is responsible for a large proportion of the bad results. This teaching has been perpetuated, in my opinion, for two reasons. In the first place, labor being considered a simple normal process, the greater proportion of confinement cases are cared for by the general practitioner, who has been taught to believe that departures from the normal are so rare that he need take thought of them only after they arise, and who seldom recognizes abnormalities until it is too late to prevent trouble, and who, therefore, considers it unnecessary to oversee properly the course of labor, since he has been told that nature is all-sufficient, and that when nature fails it is not his fault, but that the consultant will

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take the blame for whatever bad results may follow his neglect.

This condition emphasizes the claim, which has been repeatedly made of late years, that the general practitioner should not attempt to handle obstetric cases when a specialist can be employed, because he is usually unable to foresee and forestall complications.

The second reason against the early use of anesthesia seems to be that if the patient's sufferings are relieved in the early part of labor, she will refuse to go through the remainder of her labor without help, and the use of anesthetics must be continued until delivery is accomplished. This is hardly a serious objection, however, since it involves inconvenience and trouble to the attendant only, who must give the patient the care and attention her case demands, instead of relegating the case to her nurse, for whose work and watchfulness he collects the fee.

For some time I have firmly believed that the suffering involved in labor deserves relief, and I have made it a rule to tell each patient at the beginning of labor that when the pain reaches such a point that she desires relief, she can have ether to the degree of dulling sensibility, no matter what stage of labor has been reached.

There are certain theoretical objections urged against the prolonged use of ether: 1. That the tendency to postpartum hemorrhage is increased. 2. That labor will be prolonged, is owing to the stopping of the pain. 3. That infant mortality will be increased.

In a series of fifty primiparous labors, in which I have used ether during the first stage from the time when the patient asked for it, the results have been satisfactory, both to me and to the patient. In these cases there has been apparently no increased tendency toward hemorrhage, and I believe that hemorrhage is almost always due to improper conduct of the third stage of labor and to a lack of care in guarding the uterus afterward, and that the tendency to hemor-

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rhage is very slightly increased, if at all, by the prolonged use of ether. In regard to the danger of prolonging labor by stopping the pains, my experience has been that the use of ether, to the obstetrical degree, during the first stage of labor exerts no effect on the rhythm and regularity of the contractions, and that, far from delaying dilatation of the cervix, dilatation proceeds distinctly more rapidly when the sense of pain is somewhat dulled. It seems probable that spasm of the cervical muscle is developed by the pain involved in its dilatation, and the early relief of this pain, in my opinion relaxes this spasm, and distinctly hastens dilatation. The effect of prolonged administration of ether on the children has been noticeable in a considerable proportion of the cases, and many children are fairly deeply etherized and require careful resuscitation. I have yet to see, however, any serious effect on the child from this anesthetization, and it seems to be distinctly less marked than is the rule in children delivered by Cesarean section, where a full dose of ether is used for a short time only before delivery.

Aside from the definite advantages, already mentioned, that ether used in this way confers by shortening labor, another, and to my mind one of the greatest importance to the patient, is the fact that although the severe pains of labor are felt and complained of at the time, the general effect of the ether is to cloud the recollection to such a degree that the patient does not look forward to a second labor with fear on account of the suffering involved in her first labor.

That ether used in this way during contractions gives marked relief is easily proved by the patients' statements, when, in a subsequent labor, pride has impelled them to go without relief until the second stage is well under way.

I have seen no bad results that can, in my opinion, be attributed to the prolonged use of ether, although there are certain points that may call forth criticism. In the first

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place, about seventy-five per cent. of the labors have been terminated by operation, usually low forceps, early in the second stage. This has not been due to the effect of the ether on labor pains, however, but to my own personal belief that the nervous and physical exhaustion entailed by a more or less severe second stage will do more permanent harm than a carefully performed operative delivery; and since I have adopted this policy I have had very few unfavorable complications during the convalescence, and the patients have recovered their normal nervous tone much more rapidly than when operation has been resorted to only after nature has failed.

At present I believe that the great majority of patients would react much more favorably after a short labor terminated by operation than after a prolonged natural labor.

In two cases I have seen results which might be attributed to this policy of early operation following the use of ether, were it not for the fact that I have had similar results in cases where neither ether nor operative delivery was employed. In these two cases delivery was followed by an acute collapse in the absence of hemorrhage, which lasted for several hours, but was followed finally by reaction and recovery. I am inclined to attribute this collapse to acute dilatation of the heart, and I believe that it might have been avoided in both instances by an earlier operation, thus sparing the patients from the strain of labor to a greater degree. I have seen the same results follow a short normal multiparous labor, in which ether was given only as the head passed over the perineum, and I believe that the strain of labor on a flabby heart is the important factor in the case, and that early anesthetization and operation is a safeguard rather than a danger. My own feeling is, that the pain and strain of labor are a serious burden to the average woman to-day, and that every means should be employed which can lessen the existent dangers without adding new ones, and I believe that the use of an anesthetic from the

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time when labor becomes severe tends to relieve the pain and strain to a considerable degree.

Although the use of ether has proved satisfactory in my hands, the reports of scopolamine-morphine anesthesia in general surgery seem to indicate that there may be a future for this method of anesthetization in obstetrics, while the simplicity of its administration, combined with the absence of even the slight discomfort which is attendant on the use of ether, would render it an ideal method for use in labor if its action could be proved both certain and safe. With this object in view I have employed it in forty-one cases, bearing constantly in mind the fact that its abuse, or rather overuse, has been responsible for a considerable number of deaths, when it has been employed as a general surgical anesthesia. The ideal action of this method can be best exemplified by the following case:

Mrs. A., aged twenty-three years, primipara. Labor began at 8 P.M., August 2d. Pains infrequent and slight until 10.30 P.M., when they became strong and regular, recurring every five minutes, lasting three-quarters of a minute. Patient seen first at midnight. Very strong pains, lasting a minute, recurring once in four minutes. Examination showed a rather rigid cervix, dilated an inch, head presenting, position left occipito anterior. One subcutaneous injection of 1/200 scopolamine and $\frac{1}{6}$ of morphine was given. Patient gradually became drowsy, and complained less of the pains. Within half an hour the patient began to sleep between the pains and during the less severe pains, waking only at intervals of from ten to fifteen minutes, when an unusually severe pain occurred, and dropping off to sleep again when the pain had ceased. At the end of about five hours the effects of the drugs seemed to have disappeared. Examination showed a fully dilated cervix, the head being on the perineum. Good pains at short intervals for the next half-hour resulted in no apparent progress, and the patient was etherized and delivered by forceps. The third stage

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of labor was normal, the placenta being expressed after six or seven good contractions. There was no abnormal bleeding, and the patient's pulse was good and regular throughout the labor. The only noticeable abnormality about the labor was that the uterus showed a marked tendency toward relaxation after the conclusion of the third stage, and it was at least an hour before proper contraction occurred. The total length of labor, including the operation, was but ten hours, or distinctly shorter than the average primiparous labor, and there can be no doubt about the relief from pain afforded by the anesthetic.

The advantages which have been claimed for this method of anesthetization are: 1. Labor is rendered almost comfortable in the majority of cases by the relief from pain afforded by the use of the drugs. 2. Labor is distinctly shortened by the effect of the scopolamine in relaxing the cervical muscle, and thus cutting short the first stage.

The disadvantages would seem, theoretically at least, to be a lessening of the contractile force of the uterus, thus rendering the second stage of labor inefficient, owing to the reduced power of the uterine muscle; an increased danger of relaxation of the uterus and consequent hemorrhage following the third stage, dependent on the same cause; and the danger attendant on the use of a cardiac depressant like scopolamine, particularly when combined with morphine, in a patient with a weak heart.

In the series of forty-one cases on which this paper is based, the ordinary dosage was 1/200 of a grain of scopolamine combined with $\frac{1}{8}$ of a grain of morphine given hypodermically. In twenty-seven cases, one dose only was given, and in fourteen cases the dose was repeated at least once. In two cases, scopolamine alone was used, in order to give some idea of its efficiency when not combined with morphine. In one patient, morphine was tried without the scopolamine.

In the twenty-seven cases that received a single dose,

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there was marked relief of symptoms in eighteen cases, while in nine cases no effect was noted and the character of the labor was apparently not modified. In the patients who reacted favorably to the drug, the effect varied with the susceptibility of the patient. In a few cases the patient fell into a sound sleep, lasting from one to three hours, although the uterus could be felt contracting regularly, and the relief from pain lasted for some time after the patient awakened, while in others the patient slept only in the intervals between pains. A few patients did not sleep, and stated that although they could still feel the contractions, they suffered no pain. Of the fourteen patients who received more than one dose, eleven experienced marked relief, one patient sleeping seven hours out of ten, from the time of the first dose until delivery was accomplished. It is evident, therefore, that the susceptibility of patients to the effects of the drugs varies markedly, and that in a considerable proportion of cases the dose must be repeated before a marked effect can be expected.

The second stage of labor was unsatisfactory in seven cases, six low forceps operations and one breech extraction being necessary. Five operative deliveries were necessary in patients who had received only one dose of scopolamine, and since four of these patients had not reacted to the drug symptomatically, it is at least doubtful whether the operative list was at all increased by its paralyzing effect on the uterus. The unpleasant symptoms which must be attributed to the drugs were noted as follows:

In four cases, three of whom showed no other signs of reacting to the treatment, there was moderate postpartum hemorrhage, though in no case to a dangerous degree. In two other cases the action of the uterus after the completion of the third stage was distinctly unsatisfactory, a marked tendency to relaxation being noted, although no hemorrhage occurred. Three patients vomited throughout labor following a single dose. This effect was probably due to undue susceptibility to the morphine, rather than to the scopolamine.

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One patient ran a poor pulse for some hours after a repetition of the dose, the rate at one time reaching 150, and the patient's condition seemed distinctly alarming. One patient complained of dizziness after a single dose, although her pulse was unchanged. Thirty patients experienced no unfavorable symptoms. The length of labor in the twenty-eight patients who experienced relief from pain was distinctly shorter than the average primiparous labor, averaging 12½ hours, while in the patients who experienced no relief, the labor averaged thirty hours. Whether this effect was due or not to the action of the scopolamine, it is impossible to determine, but it is at least suggestive, and it seems fair to assume that in the patients who react favorably to the drug the first stage of labor is apt to be distinctly shortened. In the two patients who were given scopolamine without morphine there was no relief from the pain, although in one case the dilatation of the cervix seemed to proceed more rapidly after the drug was given than before. The patient who was given morphine without scopolamine had marked relief from pain, sleeping between pains for over three hours, following a dose of one-quarter grain, and finding the pains distinctly relieved. Of course, no effect was to be expected on the dilatation of the cervix.

CONCLUSION. In comparing the results obtained by the two methods, I believe that the action of ether during the first stage is more certain, and less liable to be followed by uncomfortable after-effects, than the use of scopolamine and morphine, but its administration involves more trouble to the attendant.

Definite results are to be expected from the use of scopolamine-morphine in combination in the majority of patients, and those who are not susceptible to its effects do not seem to show any serious after-effects, while the frequency of operative delivery does not seem to be increased by its use.

The after-effects are slight when the dose is carefully

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limited, though the action of the uterus after labor is completed must be carefully observed, as relaxation, with the consequent hemorrhage, is a distinct danger. Scopolamine alone seems to have no effect in controlling the pain of labor, while morphine alone may control the pain satisfactorily, but has no effect in hastening dilatation.

Although there have been no serious results among the cases on which this paper is based, the one patient whose heart reacted badly serves as a warning against over-free or indiscriminate employment of this method of anesthesia, and only a wider experience can prove whether the dangers are real or imaginary.

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PAPERS

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A CAREFUL STUDY OF THE PARAMETRIUM IN TWENTY-SEVEN CASES OF CARCINOMA CERVICIS UTERI AND ITS CLINICAL SIGNIFICANCE.

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Clinical experience has taught us that cancer of the uterine cervix is one of the most dreaded as well as frequent forms of malignant neoplasm. The diagnosis is usually not made until after growth has extended beyond the possibilities of operative relief, and in only a very small percentage of the cases operated upon has the cure been permanent.

Judging from the clinical manifestations of the disease, its course is rapid, the patients rarely living over three years and about three-quarters of them dying within two years, and one-third within one year, after its first manifestation. Furthermore, the disease progresses more rapidly in the younger women and pregnancy apparently increases the rapidity of its growth. The above naturally suggests the importance of an early diagnosis, as a short period of neglect in such a rapidly growing tumor might permit the growth to extend beyond operative treatment. This early diagnosis is possible in the majority of cases, because in over 60 per cent. of 412 cases admitted to the Johns Hopkins Hospital there was a history of neglected uterine bleeding for over six months; and in over half of the twenty-seven cases reported in this paper, neglected uterine bleeding had been present for over six months, and these patients had all been operated upon during the last four years.

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The results of the operative treatment in the past show that the disease usually reappears in the vaginal vault, indicating that either the growth had not been entirely removed at operation or that there had been an implantation of cancer during it, or else that there had been a true recurrence of the disease. These facts have not only suggested the importance of an earlier diagnosis to many operators but also the importance of a more radical operation in order not only to remove more widely this tissue about the cervix in which cancer usually has reappeared after hysterectomy, but also to extend the operation still farther and remove the pelvic lymphatics. It is too early to make definite statements in regard to the clinical results of these more radical operations, and especially as to the advisability of the removal of the pelvic lymph nodes, but the results, so far, indicate that in the wide incision of the parametrium we have a means of not only operating on more advanced cases than previously but also of curing a much larger percentage of all cases seen.

These operations have furnished us with specimens, for pathological study, which differed from those of the former operations in that they contain the tissue in which the growth had formerly remanifested itself, and which had not been removed by the vaginal or usual abdominal hysterectomy. I refer to the parametrium, whose tissues are usually first invaded by the extension of the disease and in which the growth has usually first appeared after hysterectomy.

The careful studies of Kundrat (*Arch. f. Gyn.*, 1903, lxix, 355–409) in Wertheim's clinic have been of great value in explaining the results of the operative treatment of this condition. Baisch's careful work (*Arch. f. Gyn.*, 1905, lxxv, 273–299) in Döderlein's clinic has been confirmatory of the findings of Kundrat. Kundrat found in eighty cases studied that both the parametrium and pelvic lymph nodes were free from cancer in thirty-two. In forty-eight cases the growth was found to have extended beyond the

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uterus and in all but four of these cases the parametrium of one or both sides was involved. In twenty-two cases the parametrium was involved but not the pelvic lymph nodes, suggesting that the former had temporarily checked the further extension of the disease, and in addition it was involved on one or both sides in twenty-two of the twenty-six cases in which the pelvic lymph nodes were found to be cancerous. Kundrat's work is above criticism, as it is based on serial sections of the parametrial tissue and lymph nodes from eighty cases of carcinoma of the cervix, operated upon at Wertheim's clinic. Three years were consumed in the work and over 21,000 microscopic sections were studied.

The work I wish to present is based on the careful study of twenty-seven specimens removed at Dr. Kelly's clinic at the Johns Hopkins Hospital, Baltimore, Md. (Here I wish to thank both him and his associates for the privilege of studying this material.) In all cases a drawing, to measure, was made of the specimens removed as well as of the vaginal portion of the cervix; and in several cases plaster casts of the latter were also made. The entire specimen, without cutting it open, was then hardened in 4 per cent. formalin. After this, a thin sagittal slice, about 2 mm. thick, was removed from the centre of the specimen, thus dividing the specimen into two halves with the loss of only about 2 mm. of tissue This slice (either as a whole or else divided, if too large) was fixed, imbedded in celloidin, cut and stained, thus giving a stained sagittal section of the entire uterus. Cross-sections of the parametrium on each side with half of the cervix attached were made, dividing this tissue into four or five blocks, depending on the length of the cervix. These blocks were numbered, fixed, imbedded in celloidin and cut. In some instances every fifth section was stained, mounted in water, and, if interesting, saved and permanently mounted in balsam, in other cases only the apparently interesting ones were stained and in still other cases portions of the blocks were

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cut and stained in series. The varied technique depended upon the appearance of the tissue as it was cut, for with practice, one becomes quite expert in detecting pathological changes in even an unstained section of the parametrium. The result of this work gave an incomplete series of sections through the parametrium of each side with cervix attached. From these, the growth was reconstructed, thus showing its approximate relation to the specimen removed.

Some of the pelvic lymph nodes had been removed in nineteen of the twenty-seven cases and were studied by cutting each node and placing the sections in a bottle and staining them all at one time, and then removing the stained sections, mounting them in water and examining them under the microscope until cancer was either found or else excluded.

Before considering the findings in these twenty-seven cases, it is well to speak of the various types of cervical cancer, and their significance; for the different types vary in their frequency, appearance, manner of growth and malignancy.

1. Histologically, we may classify cervical cancer into *squamous-celled carcinoma* and into *adenocarcinoma*, according to the form of epithelium present in the growth. The vaginal portion of the cervix is normally covered by stratified epithelium, which is directly continuous with that of the vagina and usually ends at the external os, but may extend up into the cervical canal for varying distances, especially in older women. Cancer arising from this form of epithelium, whether from the vaginal portion of the cervix of the cervical canal, is known as the squamous-celled carcinoma. This is probably the more important variety for it is the more frequent, twenty-four of the twenty-seven cases being of this type and nineteen of them apparently arising from the vaginal portion of the cervix.

The cervical canal, on the other hand, is usually lined by high cylindrical cells which generally meet the stratified

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epithelium at the external os, but may extend beyond it, over the vaginal portion of the cervix. Cancer arising from this form of epithelium, irrespective of its place or origin, whether within the cervical canal or from the vaginal portion of the cervix, is known as the cylindrical-celled or adenocarcinoma. This occurs less frequently than the other variety (three of the twenty-seven cases), but it is apparently more malignant, while its usual origin within the cervical canal (all three cases) makes its diagnosis more difficult.

2. Topographically, we may classify cervical cancer into those arising from the *vaginal portion* of the cervix and those arising from within the *cervical canal.* The importance of this classification is very evident, for cancer arising from the former would probably give rise to symptoms earlier than a similar growth arising from the latter, and, furthermore, would be more readily diagnosed on inspection or palpation. In nineteen of the twenty-seven cases the growth apparently arose from the vaginal portion of the cervix and in each instance was of the squamous-celled variety. In the very advanced cases, it may be impossible to ascertain the origin of the growth, though cancer arising from the vaginal portion of the cervix usually invades the deeper tissues of the cervix (frequently of one lip) and does not involve the cervical canal until late in the course of the disease, while cancer arising from the cervical canal involves the surface of this and then invades the cervix on all sides, but the vaginal surface of the cervix may not be involved, or not until after the disease has become very extensive.

3. Morphologically, we may classify them according to the form of the growth irrespective of its histological structure or its situation. We do not know why in one case the growth seems to "evert," giving rise to a papillary or a cauliflower mass, while in another case apparently the same type of growth "inverts," forming a nodule of cancerous tissue in the cervical wall, with but very little evidence

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of the disease on the surface until after necrosis and ulceration have taken place. The malignant process may be circumscribed in one instance, and apparently the same type of growth may be diffusely scattered throughout the cervical tissue in another. Intermediate forms, and some times both processes, are present in the same specimen. In the progress of the disease the growth may, apparently, sometimes pass from one type into another. Usually it may be classified according to the predominating type, whether *everting* or *inverting*. The everting form occurs less frequently and is usually of the squamous-cell variety and more often arises from the vaginal portion of the cervix. Only six of the twenty-seven cases were, apparently, of this variety and five of them were squamous-cell and all but one arose from the vaginal portion of the cervix. On the other hand, twenty-one cases were of the inverting type, nineteen of them being squamous-cell, and in fifteen cases arose from the vaginal portion of the cervix.

A study of these cases suggests that the adenocarcinoma is relatively infrequent but is the most malignant form; that the evertive type of the squamous-celled carcinoma arising from the vaginal portion of the cervix is also relatively infrequent, but at the same time the most benign form. On the other hand, the invertive type of the squamous-carcinoma is the most frequent variety, whether arising from the vaginal portion of the cervix (its more frequent origin) or from within the canal, is unfortunately usually very malignant, and for these two reasons constitutes the most important group.

From the study of the parametrium and pelvic lymph nodes in our specimens, we may consider the following groups of cases:

1. Parametrium and pelvic lymph nodes free from cancer.
2. Parametrium free but pelvic lymph nodes infected by cancer.
3. The direct extension of the growth into the parametrium.

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4. Metastases of the disease to the lymph structures of the parametrium.

5. Metastases to the pelvic lymph nodes.

We may also consider another classification of these cases, which is also of great clinical importance.

1. Limitation of the movements of the uterus, caused by adhesions from inflammatory disease of the uterine appendages (independent of cancer), which may deceive one as to the extent of the malignant process and also increase the difficulties of the operation.

2. Limitations of the movements of the uterus resulting from adhesions from inflammatory disease of the uterine appendages, caused by cancer.

3. Indurated feeling parametrium in which cancer was found.

4. Indurated feeling parametrium in which cancer was not found.

5. Clinically normal parametrium in which cancer was found.

PARAMETRIUM AND PELVIC LYMPH NODES FREE FROM CANCER. In ten of the twenty-seven cases I was unable to find any evidence of cancer in the parametrium, but in three of the former cases cancer was found in the pelvic lymph nodes. This demonstrates that in only seven of the twenty-seven cases is there a possibility of the growth being limited to the uterus, because we know that it had invaded either the parametrium or the pelvic lymph nodes, or both, in twenty of the specimens. The chances of overlooking cancer, as well as the fact that in three of the seven cases where the growth was apparently local the pelvic lymph nodes were not removed, suggest that possibly the disease may have also extended beyond the uterus in one or more of the seven apparently early cases. An early growth with parametrium and pelvic lymph nodes free is shown in Figs. 1 and 2, and a much larger growth with possibly a similar condition is shown in Figs. 3 and 4.

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PARAMETRIUM FREE BUT PELVIC LYMPH NODES INFECTED BY CANCER. The pelvic lymph nodes were studied in nineteen cases and one or more lymph nodes were found involved in nine, while in three of the latter cancer was not found in the parametrium of either side. This shows that we may have an early growth in which the disease has apparently passed through the parametrium, without infecting it, but nevertheless has invaded the pelvic lymph nodes beyond. One of these cases is shown in Figs. 5 and 6. Possibly a similar condition may have been present in one or more of the three early cases in which the pelvic lymph nodes were not removed. This condition was also found in a patient, recently operated upon by me, but not included in this series.

THE DIRECT EXTENSION OF THE GROWTH INTO THE PARAMETRIUM. This is the most frequent manner in which the parametrium is invaded by cancer, occurring in fourteen of the seventeen cases in which such invasion occurred. Moreover, metastases to the lymph structures of the parametrium were also present in six of these cases. Of great clinical importance is the fact that the parametrium may be cancerous while the pelvic lymph nodes are free, demonstrating that the parametrium may be able to check the disease temporarily, and, accordingly, if we can remove the entire local growth we may be able to cure a large percentage of such cases. (See Figs. 7 and 8.)

Schauta (*Monat. f. Geb. u. Gyn.*, 1904, xv, 475–521) studied the pelvic and abdominal lymph nodes in sixty cancerous patients coming to autopsy. Forty died from the natural termination of the disease, nine from intercurrent affections, and eleven as the result of operation, and 43.3 per cent. of them were entirely free from metastases.

The pelvic lymph nodes were studied in eleven of the fourteen cases of our series, in which the disease had invaded the parametrium by direct extension; in six cancer was not found in the pelvic lymph nodes, thus suggesting that the

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disease may have been still local in half of these cases. The direct extension of the disease may present two pictures. In the first, the diseased area may be nearly entirely surrounded by healthy cervical tissue except where fine thread-like processes of cancer, here and there, invade the parametrium, frequently either in the main lymph vessels or in the lymph spaces about the nerve sheaths. (See Figs. 9 and 10.) In the second, which is possibly a later stage of the first, the disease has invaded the parametrium *en masse*, forming a common tumor with the primary growth. Possibly the outer borders of the growth may present the fringed appearance similar to that observed in an apparently early stage of the invasion of the parametrium. (See Figs. 11 and 12.) In still other cases the growth may reach the parametrium and there spread out, forming a mass of cancerous tissue connected with the main growth by a narrow isthmus (see Fig. 11), so that in some cross-sections it may simulate a metastasis to the parametrium. (See Fig. 26.)

METASTASES OF THE DISEASE TO THE LYMPH STURCTURES OF THE PARAMETRIUM. This is of quite frequent occurrence, and was noted in nine of the seventeen instances where the parametrium was involved, and in three of the former metastases were present in the parametrium without any evidence of a direct extension of the disease through the cervical tissue surrounding the primary growth. In eight cases these metastases were present in lymph nodes, and in only one instance was there an apparent metastasis in a lymph channel, although, owing to faulty technique (in not saving and mounting a sufficient number of the sections in a series at this place), I am unable to eliminate the possibility of this being a direct extension. In only one other instance was cancer found in a lymph channel, and here I was able to show that it was due to a direct extension backward from an infected lymph node. Apparently, therefore, cancer, once gaining access to a lymph channel, either grows in the channel in continuity with the primary

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growth, or, if set free, is usually carried on and does not become arrested until it reaches a lymph node, whether it is situated in the parametrium or about the pelvic vessels.

In this connection we must consider three groups of lymph nodes to which cancer may metastasize and in addition a fourth one in which I have never observed metastases:

1. The relatively large lymph node frequently found near where the uterine artery crosses the ureter.

2. Numerous small lymph nodes scattered throughout the parametrium.

3. Newly formed lymph nodes projecting into the lymph channels.

4. Newly formed lymph nodes which, apparently, do not bear any relation to the lymph channels and in which I have never seen metastases.

1. THE RELATIVELY LARGE PARAMETRIAL LYMPH NODE SOMETIMES FOUND NEAR THE CROSSING OF THE UTERINE ARTERY AND THE URETER. This is not always present. In two instances I have found it cancerous and one of these is shown in Figs. 13 and 14. As seen in Fig. 13, it may have temporarily checked the further advance of the disease, for it was cancerous on the right side while the pelvic lymph nodes beyond were free; on the other hand, it was absent on the left side and the left pelvic lymph nodes contained cancer.

2. THE SMALLER PARAMETRIAL LYMPH NODES. These are typical lymph nodes and occur normally, in varying numbers. I have found cancer present in them in three cases, in two of which the primary growth was everywhere apparently surrounded by cervical tissue. One of these cases is shown in Figs. 15 and 16. In this instance the pelvic lymph nodes were also studied and cancer was not found in those examined. In this case the growth in the lymph node had extended backward into the afferent lymph channel so that cross-sections at certain levels gave appearance of a metastasis to a lymph channel, as has previously

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been mentioned. In another case of adenocarcinoma of the cervix, the disease had invaded the lymph channels of the parametrium by direct extension and had metastasized to one of these lymph nodes (See Figs. 17 and 18.) In all these cases the disease process led to but very little alteration in the size of the node or in the structure of the surrounding tissue.

3. The Apparently Newly Formed Lymph Nodes Projecting into the Lymph Channels, *i. e.*, the Intravascular Lymph Nodes. I do not know the significance of th se nodes. They were not present in the parametria, obtained at autopsy, from six women dying of various causes other than cancer, and they were present in only four of the twenty-seven specimens reported in this article. Their number varies in different cases, eight being found in one section of the parametrium, of one side, and they project into the lumen of the lymph channels like a sponge. In three of the four cases cancer was demonstrated in one or more of these nodes. They have been fully described by Kundrat who found metastases to those nodes in fifteen of the eighty specimens studied. Possibly they are rudimentary lymph nodes, and later develop into the small lymph nodes previously described.

Illustrations of metastases to these nodes may be seen in Figs. 19 and 20. The one shown in Figs. 21 and 22 is particularly interesting, as the node is situated in the lymph channel just before it reaches the large lymph node, sometimes found at the crossing of the uterine artery and the ureter, and, like a policeman, had "held up" the cancer before it had reached the larger lymph node.

4. Newly Formed Lymph Nodes which Apparently Do Not Bear Any Relation to the Lymph Channels and which Apparently are not Infected by Metastases of the Growth. Collections of lymphoid tissue about bloodvessels may be present in large numbers, appearing in the section as darkly stained areas, the size of a miliary

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tubercle. They apparently owe their origin to some stimulus, directly or indirectly caused by the new-growth, but do not necessarily bear any relation to the lymph channels, unless the so-called intravascular lymph nodes owe their origin to the invasion of a lymph channel by a bloodvessel carrying with it one of these collections of lymphoid tissue just as occurs in the embryo as shown by Sabin (*Amer. Jour. Anat.*, 1905, iv, 355–389). If these nodes become invaded it is by a direct extension of the growth. The large number of dark dots in the connective tissue about the cervix and also in the outer cervical wall (see Figs. 10, 22 and 28) represent such nodes.

ADHESIONS FROM INFLAMMATORY DISEASE OF THE UTERINE APPENDAGES (INDEPENDENT OF THE CANCER). Adhesions from pelvic inflammatory disease associated with cancer of the uterine cervix, but independent of it, is of great clinical significance. They not only cause pain, which may wrongly be attributed to the malignant growth, but they may also limit the movements of the uterus and thus make difficult the clinical estimation of the extent of the disease, and, furthermore, add greatly to the difficulties of the operation. Pelvic inflammatory disease independent of the cancer was found in eleven of the twenty-seven cases, in fourteen of the other cases the appendages were normal, in another case the inflammatory condition was apparently due to pyosalpinx arising from a pyometra, and indirectly caused by the cancer, while in the last case cancer had developed in the cervical stump remaining after a previous supravaginal hysterectomy. Of the eleven cases with adhesions from pelvic inflammatory disease, pain was noted as a symptom in eight, and was directly attributable in most of them to the adhesions. In one instance it was the only symptom complained of and led to the diagnosis of the cancer. Pain was likewise present in five of the fourteen cases where the appendages were normal, and in two of them was undoubtedly due to the extensive growth, while

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in the other three its cause was not ascertained. I think we have a right to infer that when cancer of the uterine cervix causes pain that it usually indicates that the disease has extended beyond the uterus. On the other hand, when pain is associated with other symptoms of cervical cancer we should examine our cases very carefully in order to ascertain whether or not adhesions from pelvic inflammation are present, for that may be the cause of the pain and so alter our prognosis in regard to the extent of the growth. In seven of the eleven cases with adhesions from a previous pelvic inflammatory disease, these were extensive and restricted the movements of the uterus and also increased the difficulties of the operation. In Fig. 23 is shown a very early primary growth, the parametrium and pelvic lymph nodes being apparently free, but adhesions from a previous pelvic inflammatory disease caused pain, limited the movements of the uterus and added to the difficulties of the operation.

Adhesions from Inflammatory Disease of the Uterine Appendages Caused by Cancer. In one instance a pyometra was present, and this was associated with double pyosalpinx and a resulting pelvic peritonitis, greatly limiting the movements of the uterus and adding to the difficulties of the operation. This condition is shown in Fig. 24.

Indurated Feeling Parametria, in which Cancer was Found. As has been previously stated, cancer invades the parametrium by direct extension either *en masse* or as fine, thread-like processes. The microscopic examination of the advancing border of the growth presents varying pictures in different cases. In some instances there may be a marked reaction on the part of the surrounding tissue as shown by the presence of round cells infiltrating the tissue about the advancing growth and giving rise to a marked inflammatory reaction, and hence causing an indurated feeling parametrium. In one instance (Figs. 25 and 26) this reaction was made up, almost entirely, of eosinophiles

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which accompanied the growth everywhere, *i. e.*, in the uterine tissue, parametrium, so-called vaginal implantations and also in its metastases to the pelvic lymphatics. In still other cases there may be very little evidence of cellular infiltration of the surrounding tissue, but the latter may be greatly thickened, as though attempting to wall off or encapsulate the malignant growth, and possibly this may have been preceded by a stage of cellular infiltration. It causes however, an indurated feeling parametrium. In the third class of cases there is very little reaction on the part of the surrounding tissue and hence the parametrium may not feel greatly altered by the presence of the cancer unless it is extensive.

In nearly all of the fourteen instances of direct invasion the parametrium felt more or less indurated. But, at the same time, the apparent amount of induration present on palpation did not always permit a correct estimation of the degree of involvement, as in some cases it was overestimated and in others under-estimated, though I think the former occurs more frequently, *i. e.*, I believe that before or during operation the tissues more often give the impression of being invaded by cancer to a greater extent than is afterward shown in the pathological laboratory. On the other hand, the reverse may be the case, which is especially true for the metastases to the parametrium.

INDURATED FEELING PARAMETRIUM IN WHICH CANCER WAS NOT FOUND. In one case the parametrium felt indurated but cancer was not found in it. (See Figs. 27 and 28.) It was clinically cancerous but microscopically free. This induration was caused by a marked thickening of the connective tissue of the parametrium without any cellular reaction. The uterine appendages of this case were adherent, but the adhesions were very few in number and light.

NORMAL FEELING PARAMETRIUM IN WHICH CANCER WAS FOUND. In three instances metastases were present

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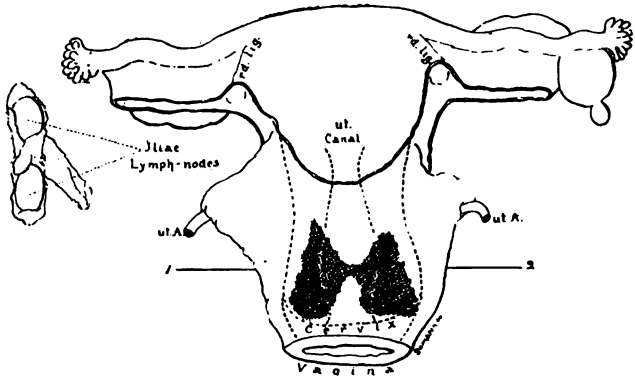

FIG. 1.—Small Primary Growth; Parametrium and Pelvic Lymph Nodes Apparently Free (Gynecolog. Patholog. No. 6848). Patient, aged fifty-eight years, thirteen children (thirty to nine years); menopause two and one-half years ago. Only symptom was a slight, but constant, blood-tinged discharge of eight months' duration, following a slight hemorrhage at the onset. Condition was good, hemoglobin 90 per cent. Clinically, the uterus was freely movable and parametrium apparently felt normal. Type of growth was "squamous-celled cancer, vaginal portion of the uterine cervix; inverting, with possibly a double focus." Reconstruction of the growth, in specimen removed, magnified ½, shows the extent of the growth and the conditions found are indicated.

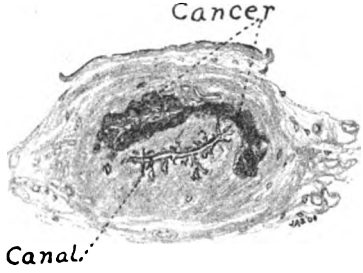

FIG. 2.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 1. The growth is well surrounded by cervical tissue and its relation to the cervical canal is shown, having invaded the cervical tissues posterior to it.

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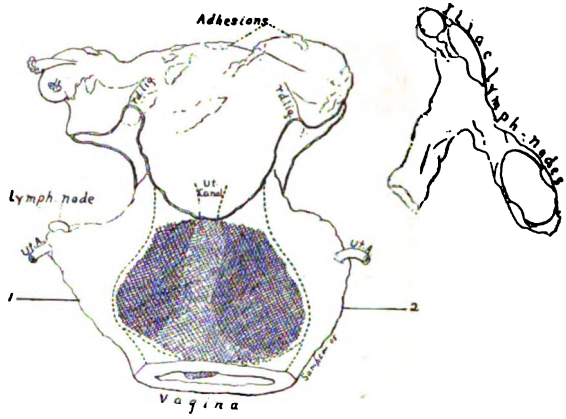

FIG. 3.—Large Primary Growth but Parametrium and also possibly the Pelvic Lymph Nodes are Free (Gynecolog. Patholog. No. 7467). Patient aged fifty years, three children (twenty-five to twenty years); menopause one year ago. Bleeding, for three months was first noticed when straining at stool; severe hemorrhages six weeks ago and more or less constant offensive watery discharge for several weeks, but no pain. Condition was good, hemoglobin 74 per cent. Movements of the uterus were limited by pelvic adhesions but the parametrium felt normal. Type of growth was probably the same as shown in Figs. 1 and 2, but apparently a single focus. Reconstruction of the growth, in specimen removed, magnified ½, shows the extent of the growth, which is still confined within the cervical tissue. The pelvic adhesions are shown which limited the movements of the uterus. The growth extends up to, but not beyond, the internal os.

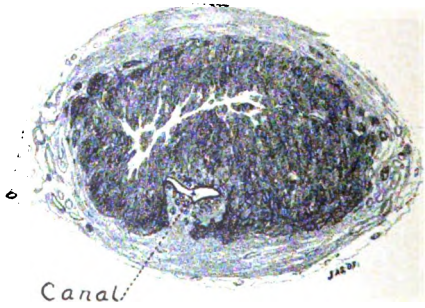

FIG. 4.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 3. The large growth is still surrounded by cervical tissue; it has invaded the tissues of the posterior cervical wall, as in Fig. 2, and has partly invaded that of the anterior cervical wall, but the cervical canal is not, as yet, entirely surrounded by cancer.

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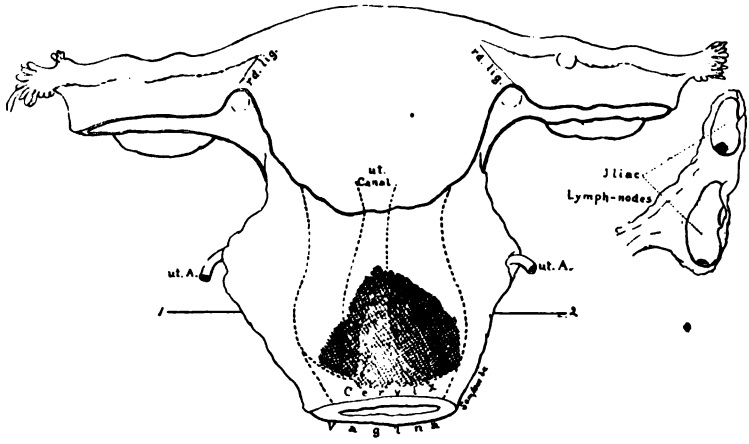

FIG. 5.—Small Primary Growth, Parametrium Free but Pelvic Lymph Nodes Infected by Cancer (Gynecolog. Patholog. No. 6543). Patient, aged fifty-four years; eight children (ages?); menopause one year ago. Bleeding for two months was the only symptom. Condition was good, hemoglobin 70 per cent. Uterus was freely movable and parametrium felt normal. Type of growth was the same as the two previous ones. Reconstruction of the growth, in specimen removed, magnified ½, shows a small primary growth surrounded by cervical tissue, parametrium free but cancer in the pelvic lymph nodes.

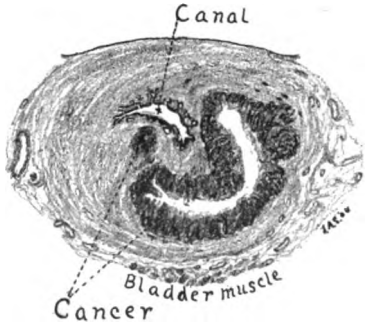

FIG. 6.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 5. The growth is still confined within the boundaries of the cervix and has invaded the deeper tissues of the anterior wall of the cervix, rather than the canal, just as the posterior wall was invaded in the specimens shown in Figs. 2 and 4. Necrosis has occurred, forming a deep ulcer which appears as a cavity in the cross section.

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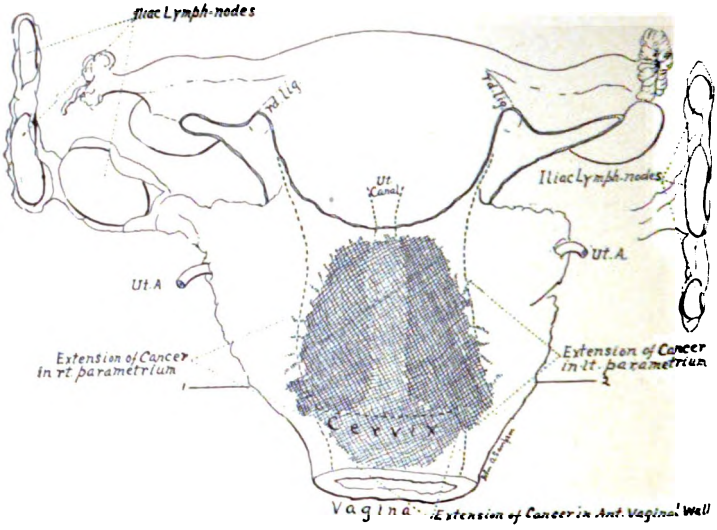

FIG. 7.—Large Primary Growth, with Direct Extension into the Parametrium as Thread-like Processes, but Pelvic Lymph Nodes are Apparently Free (Gynecolog. Patholog. No. 7468). Patient aged thirty-seven years, seven children (fifteen to two and one-half years). Bleeding was the only symptom, of two years' duration, at first irregular but very profuse, constant the last three months. Patient was anemic; hemoglobin 55 per cent. Parametrium was apparently indurated, growth had involved the deeper tissues of the vagina all around the cervix. Type of growth was squamous-celled cancer, cervical canal, inverting (scirrhus). Reconstruction of the growth, in the specimen removed, magnified ½, shows an extensive growth involving the parametrium and vagina on all sides, but the pelvic lymph-nodes, while they were enlarged, were apparently free.

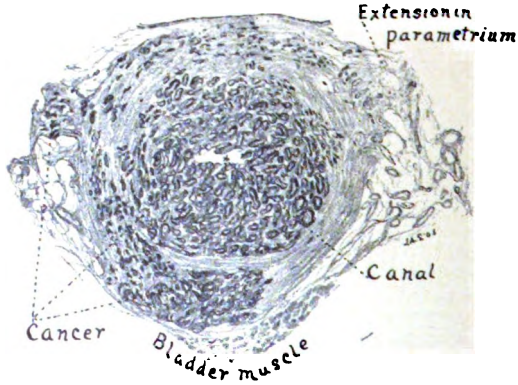

FIG. 8.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 7. The growth has involved the entire cervix in a diffuse manner, spreading out from the cervical canal; the thread-like extensions into the parametrium are also shown.

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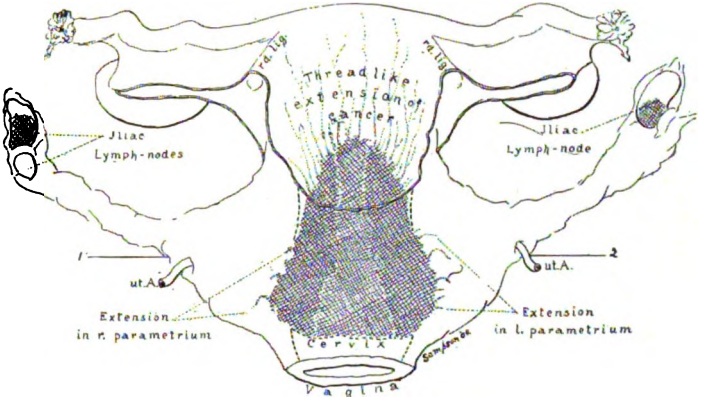

FIG. 9.—Large Primary Growth with Direct Extension into the Parametrium and Body of the Uterus as Thread-like Processes; Pelvic Lymph Nodes also Cancerous (Gynecolog. Patholog. No. 7419). Patient aged thirty-seven years; six children (fourteen years to thirteen months) Bleeding had been present for ten months, began three months after last child was born; also pain in back. Condition was fairly good, hemoglobin 73 per cent. Movements of the uterus were restricted by the posterior extension of the disease and also by the apparently indurated parametrium. Type of growth was squamous-celled cancer, vaginal portion of cervix, inverting. Reconstruction of the growth, in the specimen removed, magnified ½, shows the thread-like extensions of the disease into the parametrium and body of the uterus and also the cancer in the lymph nodes.

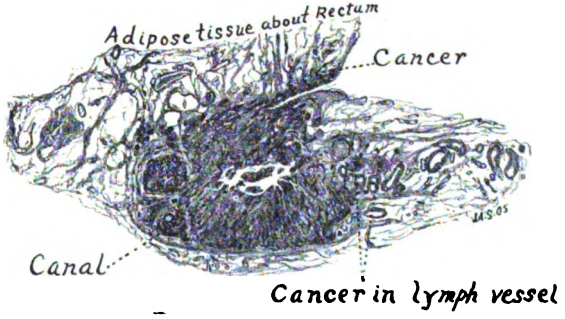

FIG. 10.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 9. The cervix has been entirely replaced by cancer, which has extended posteriorly, obliterating the cul-de-sac and invading the adipose tissue about the rectum. A thread-like extension in a lymph vessel of the left parametrium is shown in cross section (cut twice).

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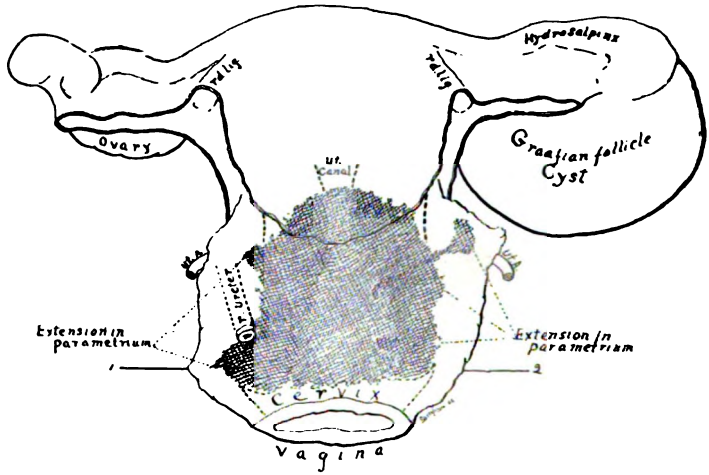

FIG. 11.—Large Primary Growth with Direct Extension into the Parametrium, *en masse* (Gynecolog. Patholog. No. 6715). Patient aged thirty-six years; seven children (eighteen to five years). Uterine bleeding alternating with a foul discharge had been present for four months; slight pain in the lower abdomen was probably due to adhesions from pelvic inflammatory disease. General condition was fairly good. Movements of the uterus restricted by the pelvic adhesions and by the indurated parametrium. Type of growth was the same as in Figs 9 and 10. Reconstruction of the growth, in the specimen removed, magnified ½, shows the involvement of the parametrium by the growth *en masse*, and that, although the primary growth is extensive, the body of the uterus has been invaded for only a short distance. Cancer was found in a pelvic lymph node of the left side.

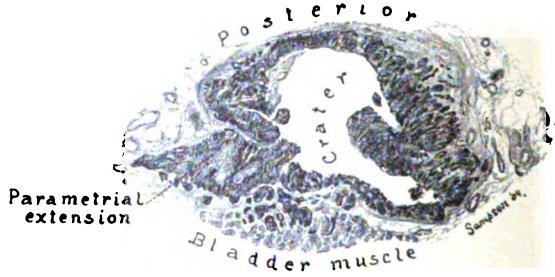

FIG. 12.—Stained Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 11. The growth has invaded the parametrium on each side and the bladder wall anteriorly

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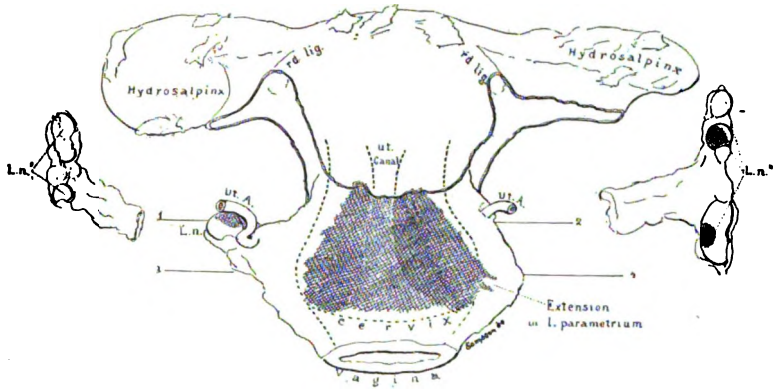

FIG. 13.—Metastasis of Cancer to a Large Parametrial Lymph Node (occasionally present) (Gynecolog. Patholog. No. 7077). Patient aged thirty-six years; one child (age?). History was unsatisfactory. Bleeding had been present for only a few days, but probably she had been curetted a month ago. Pain was of seven weeks' duration, probably due to adhesions from an extensive pelvic inflammatory disease. General condition was excellent, hemoglobin 100 per cent. Movements of the uterus were restricted by pelvic adhesions, parametrium on the left side felt slightly indurated. Type of growth was the same as in Figs. 11 and 12. Reconstruction of the growth, in the specimen removed, magnified ½, shows the direct extension of the growth into the left parametrium; the metastasis to the large parametrial lymph node on the right side and the metastases to the pelvic lymph nodes on the left side, but those on the right are free, possibly the parametrial lymph node of that side had prevented cancer reaching those nodes.

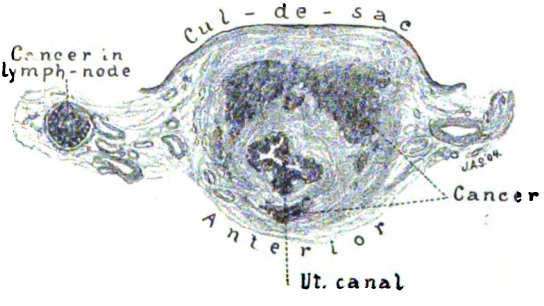

FIG. 14.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig 13. The growth has invaded the deep cervical tissues about the cervical canal and a metastasis is present in the large lymph node in the right parametrium.

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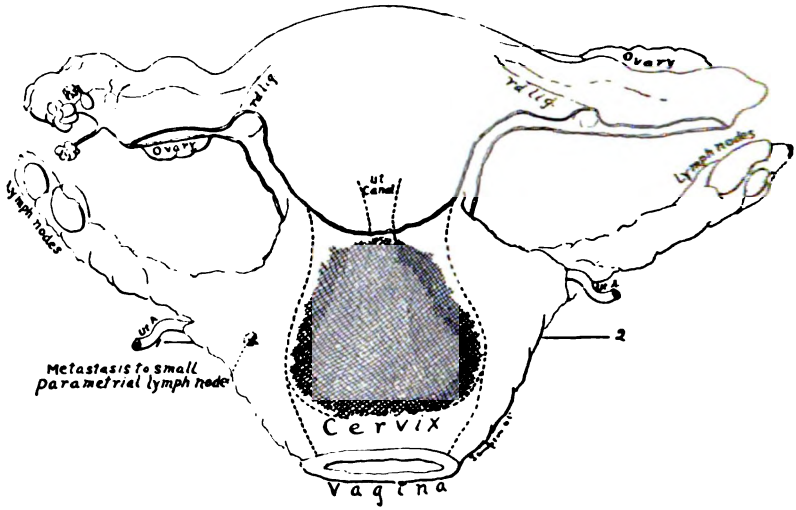

FIG. 15.—Metastasis of Cancer to a Small Parametrial Lymph Node (Gynecolog. Patholog. No. 6669). Patient aged sixty-two years; two children (forty-five to forty-three years); menopause nine years ago. Bleeding at irregular intervals had been present for seven weeks, usually when straining at stool, and at one time amounting to a severe hemorrhage. A very profuse watery discharge, not offensive, had been present for four months. General condition was poor, hemoglobin 68 per cent. Uterus was freely movable, parametrium felt normal. Type of growth as in Figs. 13 and 14. Reconstruction of the growth in the specimen removed, magnified ½, shows that the only evidence found of the disease outside of the uterus was in a small lymph node in the right parametrium. The internal os marks the upper limit of the growth.

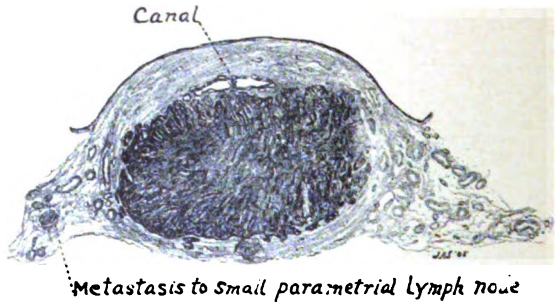

FIG. 16.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 15. The growth has invaded the tissues of the anterior cervical wall causing a pressure atrophy of the posterior wall, the cervical canal being intact. A metastasis is present in the small lymph node in the right parametrium.

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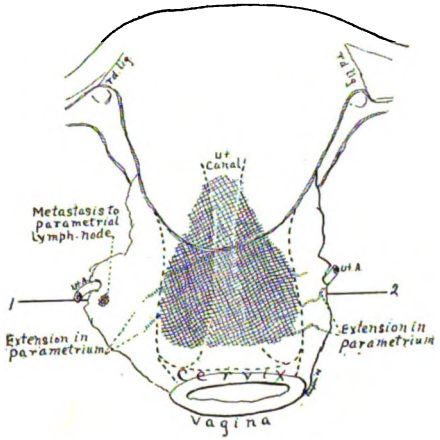

FIG. 17.—Metastasis of Cancer to a Small Parametrial Lymph Node (Gynecolog. Patholog. No. 6603). Patient aged thirty-seven years; four children (twenty-one to fifteen years). Bleeding began seventeen months ago, and seven months ago a fungoid growth was removed from the cervix and there has not been any bleeding since, but for the last five months there has been severe pain in lower abdomen and back, requiring morphine. General condition was fairly good; hemoglobin 60 per cent. Uterus was freely movable, parametrium on each side felt normal. Type of growth was adenocarcinoma, cervical canal probably everting at first. Reconstruction of the growth in the specimen removed, magnified ½, shows the direct extension of the growth into the parametrium and also the metastasis to a small lymph node. The growth has invaded the body of the uterus, extending along the endometrium

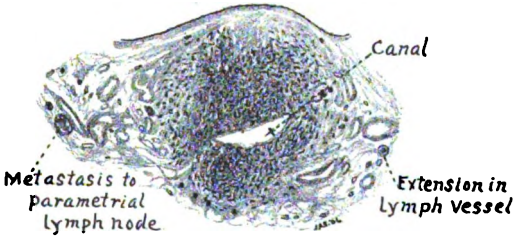

FIG. 18.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 17. The growth has spread out from the cervical canal invading the parametrium by direct extension and metastasis.

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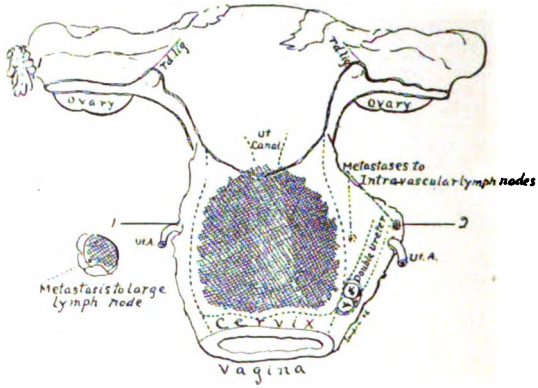

FIG. 19.—Metastasis of Cancer to Intravascular Lymph Nodes of the Parametrium (Gynecolog. Patholog. No. 6074). Patient aged fifty-four years; six children (ages?); menopause six years ago. Bleeding had been present for eight months, constant but never profuse, no other symptom. General condition was good, hemoglobin 75 per cent. Uterus was movable, parametrium of the right side was apparently normal; that of the left slightly indurated. Type of growth was squamous-celled carcinoma, cervical canal inverting. Reconstruction of the growth removed, magnified ½, shows metastases to two intravascular lymph nodes in left parametrium and metastasis to a large parametrial node on the right side. Primary growth is limited to the cervix, upper limit is at the internal os.

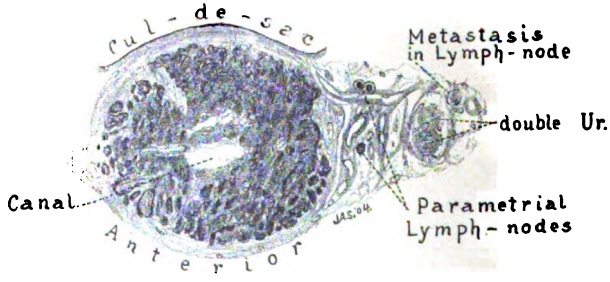

FIG. 20.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 19. The primary growth is limited to the cervix, but a metastasis is indicated in a small intravascular lymph node situated lateral to the double ureter

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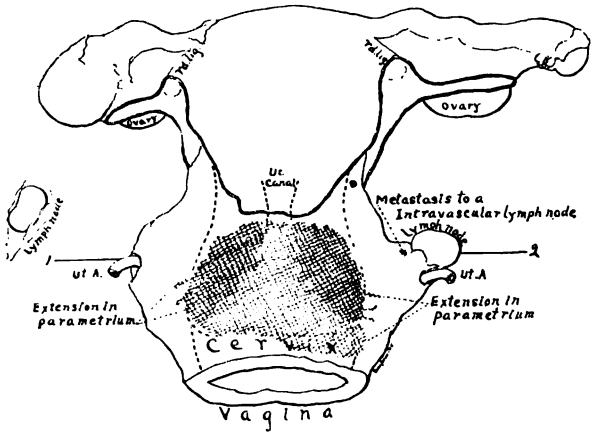

FIG. 21.—Metastases of Cancer to Intravascular Lymph Node of the Parametrium (Gynecolog. Patholog. No. 7602). Patient aged forty years; three children (ages?); uterine bleeding and a foul, watery discharge had been present for eight months. Patient had been treated locally with electricity, twice a week during the last four months. The pain present was probably due to adhesions from pelvic inflammatory disease. General condition was fairly good, hemoglobin 70 per cent. Movements of the uterus were slightly restricted and the involvement of the left side of the vagina probably accounted for the apparent indurated parametrium of that side. Type of growth was squamous-celled carcinoma, vaginal portion, inverting. Reconstruction of the growth in the specimen removed, magnified ½, shows the direct extension of the disease into the parametrium and left side of vagina and the metastasis to the small intra-vascular lymph node of left parametrium.

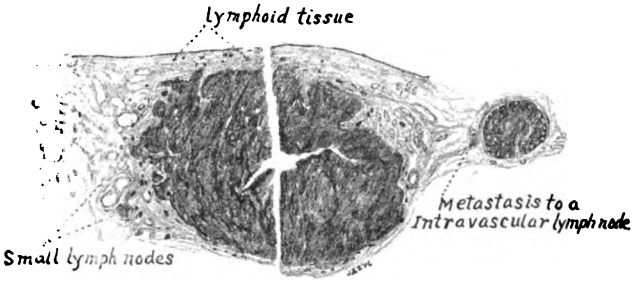

FIG. 22.—Stained Cross Section of Each Half of Cervix and Parametrium, Taken at the Line 1 to 2, Indicated in Fig. 21. Nearly the entire cervix is cancerous, direct extension is shown on the right side and has metastasis to intravascular lymph node in the left parametrium which has "held up" the cancer before it reached the large parametrial lymph node. The small dots represent collections of lymphoid tisue apparently not connected with lymph channels.

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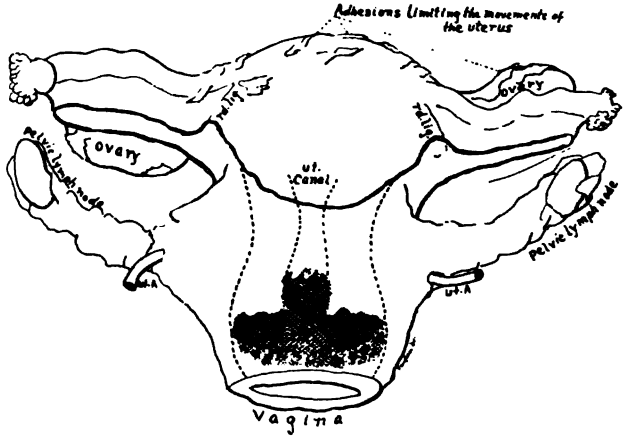

FIG. 23.—Adhesions from Pelvic Inflammatory Disease (independent of cancer) Limiting the Movements of the Uterus in a Case with a Very Early Primary Growth (Gynecolog. Patholog. No. 7601). Patient aged thirty-seven years; four children (youngest nine years). Bloody discharge had been present for five months, and a severe hemorrhage, while straining at stool occurred three weeks ago. Pain was probably due to adhesions from pelvic inflammatory disease. General condition was excellent. Movements of the uterus were limited by the pelvic adhesions, deceiving one as to the extent of the malignant process and also increasing the difficulties of the operation. Type of growth was squamous-celled carcinoma, vaginal portion of uterine cervix everting. Reconstruction of growth in specimen removed, magnified ½, shows a papillary growth arising from the posterior cervical lip and extending up the cervical canal, but limited to the cervix. The adhesions on the fundus of the uterus are shown, which held it in retroflexion.

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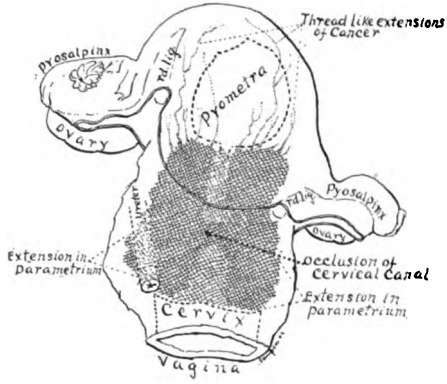

FIG. 24.—Adhesions from Pelvic Inflammatory Disease (Pyosalpinx) Secondary to Pyometra, Limiting the Movements of the Uterus. (Gynecolog. Patholog. No. 7658). Patient aged sixty-three years; seven children (forty-four to twenty-six years); menopause sixteen years ago. Bleeding for three months was the only symptom. General condition was excellent; hemoglobin 85 per cent. Movements of uterus were limited by pelvic adhesions from double pyosalpinx probably secondary to pyometra. Parametria of both sides were indurated. Reconstruction of growth in specimen removed magnified ½, shows the primary growth extending beyond the cervix, involving the body of the uterus, *en masse*, and as thread-like processes of cancer, causing pyometra from occlusion of the cervical canal and probably causing the bilateral pyosalpinx, which was present.

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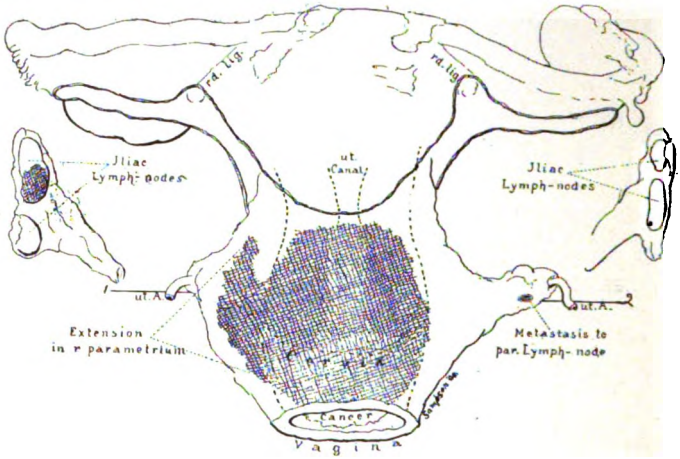

FIG. 25.—Indurated Feeling Parametrium, with Cancer (Gynecolog. Patholog. No. 7370). Patient aged thirty-five years; two children (ages?). Leucorrheal discharge had been present for six months and bleeding every time she had sexual intercourse or used a douche Pain, present for several years, was due to pelvic adhesions from previous inflammatory trouble. General condition was fair, hemoglobin 75 per cent. Uterus adherent, parametrium on both sides indurated and posterior vaginal wall was involved. Reconstruction of growth in specimen removed, magnified ½, shows the direct extension of growth nto the parametrium and the metastases to parametrial and pelvic ymph nodes.

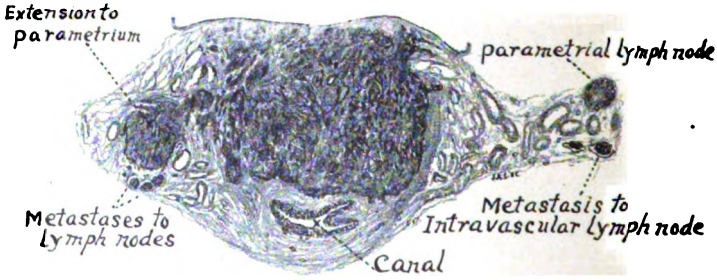

FIG. 26.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 25. The growth has invaded the posterior cervical wall, the cervical canal and anterior wall being free at this level. The parametrium has been invaded by direct extension and metastases to intravascular lymph nodes.

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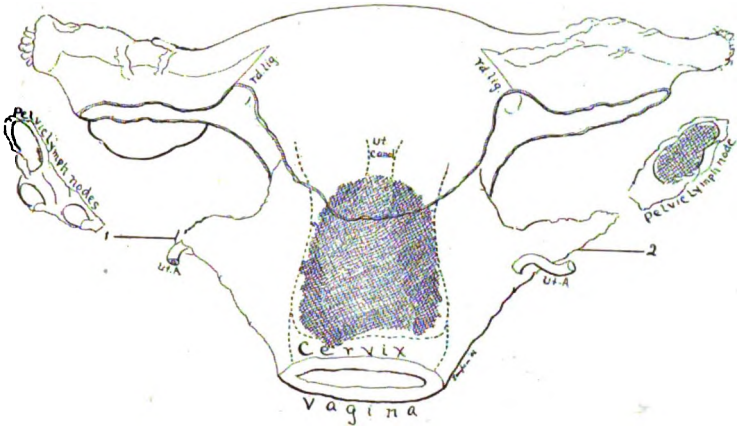

FIG. 27.—Indurated Feeling Parametrium in which Cancer was not Found (Gynecolog. Patholog. No. 6860). Patient aged forty-eight years; eight children (ages?); still menstruating. Bleeding had been of eighteen months' duration, foul, watery discharge of shorter duration and some pain possibly due to adhesions from a previous pelvic inflammation. A uterine polyp may have accounted for some of the bleeding Condition was fairly good, hemoglobin 80 per cent. Movements of uterus were restricted and parametrium of both sides felt indurated. Type of growth was squamous-celled carcinoma, cervical canal inverting. Reconstruction of growth in specimen removed, magnified ½, shows the growth about to extend into the parametrium, but the latter free, metastases were present in the pelvic lymph nodes of each side.

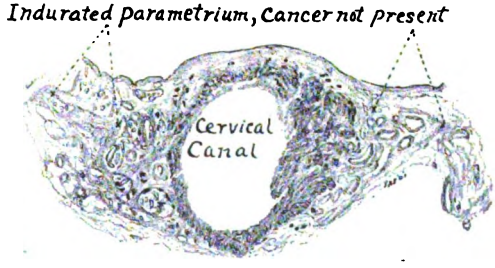

FIG. 28.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 27. The growth is still limited to the cervix; the centre of the growth had been necrotic and had sloughed away. The parametrial connective tissue is greatly thickened and there are present many new formed collections of lymphoid tissue (dark dots) about the periphery of the growth apparently without any connection with the lymph channels.

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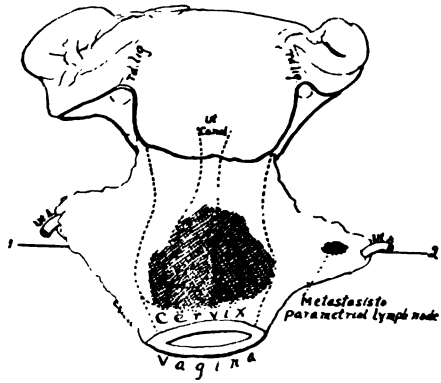

FIG. 29.—Normal Feeling Parametrium Containing Cancer (Gynecolog. Patholog. No. 6284). Patient aged forty-nine years; no children menopause three years ago. No bleeding but a foul discharge had been present for three months. Slight pain was possibly due to adhesions from pelvic inflammatory disease. General condition was excellent, hemoglobin 80 per cent. Uterus freely movable, parametrium felt normal. Type of growth, squamous-celled carcinoma, vaginal portion of the cervix, everting (cauliflower mass removed at previous curettage). Reconstruction of growth within the specimen removed, magnified ½, shows a primary growth limited to the cervix, but a metastasis is present in a lymph node of the parametrium, which was not palpated.

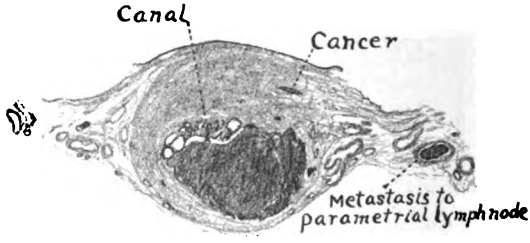

FIG. 30.—Stained Cross Section of the Cervix and Parametrium (slightly reduced), Taken at the Line 1 to 2, Indicated in Fig. 29. Primary growth is limited to the cervix, involving the anterior cervical wall and including a portion of the cervical canal. The metastasis in the left parametrium is shown which was not palpated before operation.

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in the lymph structures of the parametrium without there being any evidence of a direct extension of the growth into that tissue. In all three cases the parametrium felt normal or only slightly indurated, and there was very little or no reaction on the part of the tissue about the cancerous lymph nodes. These nodes varied in size, the two smaller ones having a diameter of about 2 mm., and the large one was bean-shaped with a long diameter of about 5 mm. Figs. 29 and 30 illustrate the latter case and the other two cases have already been shown in Figs. 15, 16, 19, and 20.

METASTASES OF CANCER OF THE UTERINE CERVIX TO THE PELVIC LYMPHATICS. Cancer was found in nine out of nineteen specimens studied. The percentage may have been higher, for the nodes, removed at operation, were only the accessible ones along the iliac vessels and sides of the pelvis. Accordingly it is not only possible but probable that other nodes than those removed may have contained cancer. Baisch concludes, after carefully considering all facts, that the pelvic lymph nodes are involved in about one-third of the operable cases of cancer of the uterine cervix, which becomes increased to one-half if only those cases are considered in which the parametrium is involved.

We all realize that there is no relation between the size of the primary growth and the presence or absence of cancer in the pelvic lymph nodes; the primary growth may be small and yet metastases may have occurred to the pelvic lymph nodes, as already shown in Fig. 5. This is very unfortunate, for we can never tell clinically whether or not metastasis has taken place. Furthermore, a large pelvic lymph node is not necessarily cancerous (see nodes in Fig. 7) and a small node does not exclude cancer. (See nodes in Fig. 13.) Accordingly it is only by the use of the microscope that we can positively exclude the existence of cancer in the pelvic lymph nodes. On the other hand, the primary growth may be extensive, and yet the disease may still be local and

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the pelvic lymph nodes free. (See Fig. 7.) I think that we conclude that in at least 40 per cent. of the extensive cases the disease has not yet metastasized. This is very fortunate, for it means that an extensive local operation without removal of the pelvic lymph nodes may cure even some of the cases which are usually considered hopeless.

Is the removal of the pelvic lymphatics of any curative value? We realize that it is impossible to remove operatively, all of the pelvic lymphatics. We can remove the easily accessible pelvic lymphatics, and undoubtedly they are usually the first to be involved by cancer, and in some cases the only ones; but if this is done as a routine procedure it lengthens the operation and therefore increases the primary mortality, and this may more than offset the gain in the percentage of cures caused by their removal, for we must admit that after the growth has metastasized, the chances for a cure have been greatly diminished, no matter how thorough the operation.

Wertheim made the following statement in his report before the Seventy-third Annual Meeting of the British Medical Association held in July, 1905 (*British Med. Jour.*, September 25, 1905, 694): "No decisive opinion can yet be given as to the value of extirpation of glands, but in the majority of cases in which cancerous lymphatic glands have been removed there has been a recurrence of the disease. Some of the cases, indeed, are free from recurrence after three to three and a half years, and I have had some tables prepared to demonstrate to you the circumstances. However that may be, it is certain that the superiority of the abdominal operation depends principally not on extirpation of glands, but on the complete removal of the cancerous uterus, that is to say, on the possibility of operating in severe cases, and at the same time of removing more of the tissue of the parametrium."

Ries (*Surg., Gyn., and Obst.*, 1905, 280–282) still adheres to the routine dissection of the pelvis with removal of the

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pelvic lymphatics, and says: "Every step back from the minimum requirements, which I stated ten years ago, may be expected to increase the ratio of recurrences." Baisch also thinks that with our present knowledge it would be irrational to give up the removal of the pelvic lymphatics. Clark, who was one of the first to advocate their removal, states (*Progressive Medicine* 1905, 152): "My own conclusion is, therefore, although very reluctantly reached, that we lose more than we gain in the radical operation when the glands are painstakingly extirpated, and to remove here and there a palpable enlarged gland, will certainly not promote the patient's interest so far as a radical cure is concerned. My own rule, therefore, is to remove one or more glands, if they are palpably enlarged, for microscopic examination. If metastasis is found, the prognosis is inevitably bad."

The experiences at the Johns Hopkins Hospital accord with that of Wertheim, *i. e.*, the growth has usually recurred when cancer has been found in the pelvic lymph nodes. In two of my own cases, however, nearly three years have elapsed since the operation, and both patients are now apparently free from any evidence of the disease, although cancer was found in the pelvic lymph nodes removed at operation. My plan at present is not to attempt to remove the pelvic lymph nodes unless I find at the close of the operation that it can be done without apparently increasing the primary mortality.

CONCLUSIONS.

1. I was able to demonstrate cancer either in the parametrium or the pelvic lymph nodes, or both, in twenty out of twenty-seven specimens studied, and, furthermore, the pelvic lymph nodes were not removed in three of the seven cases where the growth was apparently local, thus suggesting that it may not have been local in all of these cases. In three of the ten specimens where cancer was not found in the

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parametrium it was found in the pelvic lymph nodes, *i. e.*, a small primary growth metastasized to the pelvic lymph nodes without apparently infecting the parametrium through which it had passed.

2. The parametrium was found involved in seventeen instances; eight times by direct extension alone, either *en masse* or in form of thread-like processes frequently along the lymph channels or in the nerve sheaths; three times by metastases in the lymph structures of the parametrium without any evidence of a direct extension of the disease beyond the cervix; and in six cases both forms of invasion were present.

3. In the nine instances of metastases in the parametrium the lymph nodes were involved in all but one case, and in only one case was the metastasis apparently in a lymph channel, and here faulty technique makes this observation untrustworthy. Of great interest is the possibility of the new formation of minute lymph nodes which project into the lymph channels like sponges, and to which the cancer may metastasize.

4. Adhesions from pelvic inflammatory disease, independent of the cancer, may make the cancer appear more advanced than it is, by causing pain which we may wrongly attribute to the cancer. If pain is caused by the latter it is usually a manifestation of an advanced growth. The pelvic adhesions may also limit the movements of the uterus, which may also be wrongly attributed to the cancer, and thus they may also increase the difficulties of the operation.

5. The presence of a direct extension of the disease into the parametrium is usually accompanied by a reaction on the part of the surrounding tissue, which manifests itself by a cellular infiltration or hypertrophy of this tissue, thus causing induration in addition to that which may be caused by the cancer. The presence of this induration and its amount varies greatly in different cases, so that the hard or soft feeling of the parametrium affords no definite evi-

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dence of the presence or absence of cancer in that tissue or the extent of the process.

6. The parametrium may feel indurated and yet show no evidence of cancer in it. In one of these cases there was a marked hypertrophy of the connective tissue causing the induration, the etiology of which was not ascertained.

7. A parametrium, as stated, may feel normal and yet contain cancer occasionally as a thread-like extension, but probably more often as metastases. It is remarkable how little the presence of cancer cells in the lymph nodes, previously described, alters these nodes or affects the surrounding tissue so that it may be clinically suspected. *Only by the microscope can one exclude cancer from the parametrium.*

8. The pelvic lymph nodes are involved in from one-third to one-half of the operable cases, and only by the microscope can we definitely tell whether they are cancerous or not. The primary growth may be limited to the cervix, and yet it may have metastasized to the pelvic lymph nodes, or the former may be large and the nodes free. Theoretically, we should remove the pelvic lymph nodes in every instance, for if this is not done from one-third to one-half of the operable cases will die from cancer left in those nodes. But the question of the curability of these cases, and also whether or not the removal of the nodes will so increase the primary mortality as to more than offset the percentage of cures caused by their removal are problems which as yet have not been solved.

9. A wide excision of the parametrium, however, is demanded. First, because it is so frequently involved, seventeen of twenty-seven cases; and secondly, because the growth is local in from one-half to two-thirds of the operable cases and probably even in 40 per cent. of the extensive ones. We must also remember that only by the microscope can we definitely determine its existence or its extent.

10. In probably half of the cases of cervical cancer, seen at the present time, there has been a history of neglected

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uterine bleeding for over six months; this was true of the twenty-seven cases reported here. When we realize that its clinical course is usually rapid, the patient rarely living over three years, and about three-quarters of them dying within two years, and one-third within one year after the first manifestation of the disease, we can see how important an early diagnosis is and also how important it is that the patient should be operated upon as soon as possible after it is made. A short period of neglected uterine bleeding or other symptoms referable to uterine trouble may permit the growth to extend so far that the disease becomes incurable.

We have seen that in some cases the parametrium has been unable, even temporarily, to check the extension of the disease; but in other cases this has been accomplished by the reaction on the part of the connective tissue and also by lymph nodes which are normally there and possibly others which may be newly formed and projecting into the lumen of the lymph vessels prevent the cancer cells from passing them, so that in at least 40 to 50 per cent. of the cases in which the parametrium is involved, its structures have been able to temporarily check the progress of the disease. Should we not come to their assistance before it is too late? How may this be accomplished? The answer is by the "prophylaxis of the incurable condition." As yet we do not know how to prevent the disease, but all do or should realize that it is curable in a large percentage of the cases if the operation is undertaken upon the first appearance of symptoms, and it is this knowledge that we should diffuse among the profession and especially among the women of this country, for whose welfare we are directly responsible.

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HERNIA OF THE UTERUS.

By Frank T. Andrews, M.D.,
Chicago, Ill.

For several years I have been making a study of hernia of the uterus, ovaries, and Fallopian tubes, so that now I have nearly a complete record of the cases that have appeared in literature. At the last meeting of the American Medical Association I reported 46 cases of hernia of the tube without the uterus or ovary.

The result of the research to date is as follows: hernia of the tube alone, 46; hernia of the ovary alone, 167; hernia of the ovary and tube, 82; hernia of the uterus, 76; total, 371.

It is with hernia of the uterus that this paper deals. It must be remembered, however, that when the uterus enters a hernial sac it usually carries with it part or all of its appendages, or, as often happens, it follows an ovary and tube into the sac. It must not be forgotten, either, that the sac may also contain any of the other organs, ordinarily found within such sacs, notably the intestine and the epiploon.

Moreover, the genital organs do not necessarily lose their functional activity by this displacement, so that menstruation may continue with moreor less regularity, and with greater or less disturbance to the patient. Pregnancy even may occur, as has been noted in twelve of the inguinal herniæ and one femoral. In the umbilical and ventral cases the pregnancy is usually the *cause* of the hernial protrusion. Malformation of the genitalia associated with hernia of these organs is a subject for careful study, because its frequency marks it as an *etiological* factor of vast importance.

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A word as to the value of these statistics may not be out of place. All records are useful, but deductions drawn from a small number of cases may lead to error. The error may, however, be minimized, or its effect on the mind made *nil* by an appreciation of its purpose and its source. In a study of these herniæ there are special sources of error aside from the general one that we have not enough cases to make our averages correct. Taking the table above as an example, with 47 cases of hernia of the tube alone, let us remember that this condition has never been diagnosed before operation; that in each case the tube was found in the sac, sometimes alone, sometimes with intestine or omentum, as an incident during a herniotomy, a celiotomy or an autopsy. Many times it must have gone unnoticed. Many more times it certainly has gone unrecorded.

The ovary often gives positive symptoms of its presence, and, therefore, is often reported in hernia entirely from clinical evidence, but always as an ovary, never as *ovary and tube.* On the contrary, every case in the table of ovary and tube in hernia was reported from autopsy or operative finding. A very striking or important case is more likely to be reported than one thought to be trivial or common. It is certain, therefore, that the inguinal, femoral, and ischiatic herniæ of the uterus represent more nearly a complete record of such cases than the others. This would be especially true of the cases of pregnancy in those sacs. On the other hand, umbilical and particularly ventral herniæ have been but sparingly reported.

In support of these remarks, I may say that I know of more than a dozen cases of ovarian hernia and several of ventral hernia of the pregnant uterus which could have been reported by my personal friends in the profession, but which are not on record. Another item that affects statistics of this kind is that the cases with fortunate terminations get into print many times when the others are allowed to go unrecorded. This is not intended as an accusation, but

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merely as a statement of the fact that it is easier for all of us to talk of our successes than of our failures.

My conclusions are that the tube probably enters a hernial sac very much more frequently than the figures indicate, in the ovary somewhat more, and that the most complete returns have been made of the inguinal, femoral, and ischiatic herniæ of the uterus and pregnant uterus. The result is that small as the number of these cases is, still the percentage of them to the whole is too large. From which it follows, of course, that the condition is a very rare one, while the herniæ of the tube and of the ovary are more frequent than generally supposed, or than the figures show.

HISTORICAL SKETCH.

The earliest record of uterine hernia is a case by Nicolaus Pol, in 1531, of pregnant uterus in an inguinal sac, upon which he performed a Cesarean section, saving the mother.

The literature of the subject really begins with Döring (De herniæ uterinæ atque hanc justo tempore subsequentis partis Caesare historia, Vitemberg, 1612), followed by Oelhafen (De partibus abdomine contentis, Gedani, 1613), and Oneidas (Diss. de hernia uteri, Lugd. Batav., 1680).

In 1733, Brebisius records his case of inguinal hernia of the uterus, and in 1755, Haller quotes an earlier case by Papen. It was an ischiatic hernia of the ovary and tube, with the uterus drawn into the mouth of the sac.

In 1778 Doringius describes the only case on record of femoral hernia containing a pregnant uterus.

In 1779 Desault found postmortem the uterus, ovary and tube in a left inguinal hernia.

In 1799 Lallement dissected a right inguinal hernia containing these organs. This case was reported by Deneux, in 1813. Three years later his second case was described.

In 1813 also Murat noted a femoral hernia of the uterus and adnexa.

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Cloquet in 1831, Cruveilhier in 1835-42, and Hulke in 1865, described similar cases; while Riedel in 1823, Ladesma in 1840, Fisher in 1842, and Rektorzik in 1860, all record pregnant uteri in inguinal sacs.

Since 1865 the uterus has not been observed in femoral hernia. All the recent observations have been in cases of inguinal hernia.

ETIOLOGY. Hernia results when intra-abdominal pressure forces an organ through an orifice. The force exists in all individuals. The real variants are the size, shape, position, and mobility of the organ, and the patulousness of the hernial ring.

In inguinal hernia of the uterus it is probable that the ovary and tube first enter the congenitally patent inguinal canal, and thus the uterus is fixed in a position where it may be subsequently forced into the same sac. I do not believe that the usual statement that the adnexa draws the uterus in can be maintained. If, then, the ovary usually precedes the uterus, we must consider the etiology of that condition.

The ordinary hernial openings in the pelvis are the inguinal ring, the femoral ring, the obturator foramen, the ischiatic notch. Obturator hernia of the uterus has never been observed. The inguinal canal is frequently abnormally patulous at birth. Furthermore, the canal of Nuck, a tubular process of peritoneum, with the round ligament, extends into it, and may also be unusually patent. Here, then, is a port ready to receive any organ that intra-abdominal pressure may force to it.

In the male the testicle in its descent normally passes through this opening, but in the female the descending ovary passes the orifice on its way to its position in the pelvis. The descent of the ovary may be complete in a year or two, or may occupy ten or twelve years. From this it is easily seen that the ovary may be forced into an open inguinal canal and a congenital hernia of the ovary results. The

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Fallopian tube and even the uterus may follow the ovary, or may precede it.

Congenital herniæ of the ovary other than inguinal do not occur, for the reason that the anatomical relations do not favor patulous orifices, and that the ovary comes near to these openings only at a considerable period after birth.

That the position of the ovary may be a factor favoring hernia is evidenced also by the large number of ovarian herniæ occurring in cases of congenital malformation, as in cases of hermaphroditism, bicornate uterus, absent uterus, etc. In these cases the descent of the ovary is retarded or arrested in a position favoring entrance to the inguinal ring.

In some cases of hermaphroditism, in which the individual approaches the male type in other respects, it may also approach that type in this, that the ovary is affected by the same influences that determine the normal descent of a testicle into the inguinal ring. Indeed, this is a reasonable supposition, when we consider that many of the ovaries resemble testicles, so closely that a microscopic examination is necessary to make a differentiation. Many times in such cases have supposed ovaries been proved to be testicles.

In an older person, atrophy of the tissues with fat reduction, as in the connective tissues about the vessels, accounts for the weakening of the various hernial orifices; in which case muscular exertion, either long-continued or very violent, may produce a hernia.

Pregnancy or tumor by distention of the abdominal wall may favor hernia formation through the usual rings and even produce diastasis of the muscles of the wall, with a resulting *ventral* hernia. Pregnancy, tumor or uterine displacement may also so *displace* the ovary, tube, or fundus uteri that its entrance into one or other hernial orifice is facilitated. By adhesion to intestine or omentum the pelvic organs may be fixed in a position favoring entrance into a pre-existing sac. It is probable also that in many cases of hernia, either acquired or congenital, the intestine and omentum may have

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occupied the sac for a period, and having slipped back into the abdominal cavity may have allowed the ovary, tube, or uterus to occupy the sac prepared for its reception.

It is not impossible that when the Fallopian tube is the organ first herniated that the hydatid of Morgagni is the object first crowded through the ring. This small cyst is more freely movable than the tube, and is of a size and consistency well adapted to be forced through a small opening. The tube would readily follow.

Returning to the subject of hernia of the uterus, and studying the inguinal cases, one is fairly startled by the number of malformations. That imperfect development of the uterus is likely to be associated with a congenitally open inguinal canal is obvious; and that the size, shape, position, and mobility of the uterine horn is likely to favor entrance into the canal is equally so. These facts are made still more apparent by the cases of double hernia. In every one of these a uterine horn or some part of the malformed organ was found in each sac.

Nearly all, if not all, of the inguinal herniæ of the uterus have some congenital defect as the primary cause. This is evident from the fact that in one-half of the cases the uterus itself was malformed. In eight of the others the congenital nature of the herniæ is made evident by the author's statement or by the context.

This leaves but 17 cases that could be classed as free from congenital defect. Of these, Boyer's case, aged nineteen years, had never menstruated, and Scanzoni's began at the age of twenty-one years, showing at least a failure of function in these organs. In 3 cases hernia had existed for from twenty to forty years. Of these 17 cases, 3 were observed postmortem: 1 by Desault, and 2 by Lallement. Neither of these speak for or against a congenital cause for the condition.

The remaining cases were reported from operative findings, and it can hardly be denied that a herniotomy gives an insuffi-

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cient opportunity for careful examination of the genitalia within the pelvis. Moreover, such factors as a congenitally patulous orifice or a delayed ovarian descent could not be determined in the adult patient. It is to be noted also that in these 17 cases only five operators mention the herniæ as *acquired*, and it is probable that they received this information from the patients.

My conclusion is that hernia of the uterus is always *acquired* but that in inguinal cases it is almost invariably made possible by some congenital defect of the genitalia or of the inguinal ring.

CASES OF INGUINAL HERNIA OF THE UTERUS.

Böckel. Aged twenty years; congenital hernia in the left groin of a pseudohermaphrodite (masculine). Operation: The sac was found to contain uterus bicornis and a Fallopian tube, a testicle and epididymis with deferens in canal. Mass removed. Recovery. (*Gazette méd. de Strasbourg*, 1892, No. 9, p. 87.)

Boyer records the case of a woman married at nineteen; she had not menstruated. Shortly after marriage a painful swelling observed in right groin. It greatly enlarged and finally fetal heart sounds were distinguished in the mammoth hernia, which extended down below the knees. Patient was unable to walk, except by the aid of two servants, with one either side supporting the gravid uterus. (*Quoted by Granley, Annals of Gynec.*, 1892, 1893, vol. vi, p. 606.)

Brebisius. Prolapse of uterus from abdominal cavity, via inguinal hernia; gangrene; death. (*Acta. Acad. nat. curios, Norinb*, 1733, vol. iii, p. 312.)

Brohl. Aged thirty-six years; pseudohermaphrodite; patient had regularly menstruated, during which time an acquired hernia was always painful and swollen; irreducible; operation; herniotomy; excision of uterus; stump sutured in inguinal canal to Poupart's ligament. Recovery. Excised sac contained a normal left and rudimentary right ovary,

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dilated tube, and a uterus bicornis. (*Deut. med. Woch.*, 1894, No. 15.)

Bernard Browne. Aged forty years; had had a right inguinal hernia for about twenty years; shortly after last labor, small lump appeared just below the old rupture, enlarged at menstrual period. Condition lasted for several years, symptoms finally of strangulation occurred; laparotomy; the mass proved to be the right ovary; it had drawn the cornu of the uterus and the tube into the canal; the elongated broad ligament formed the pedicle to the ovary. The pedicle and tube were removed, as also the sac. Recovery. (GYN. SOC. TRANS., 1898, vol. xxiii, p. 352.)

Bylicki. Aged thirty-nine years; acquired inguinal hernia of the uterus and right ovary; the right ligament adhered to the ring and a hydatid, the size of a walnut, was located on the ovary. The adhesion was destroyed, the hydatid extirpated, and the uterus replaced. The whole sac was removed. The inguinal ring sutured. Recovery. (*Pryzcglad lakarski*, 1878, No. 27.)

Defontaine. Girl, aged seven months, inguinal hernia of the uterus and both ovaries; hernia was located at the left and was noted at the age of two months. The uterus and both ovaries were reduced one-half in the abdomen, and recovery took place eight days later. (*Arch. prov. de Chir.*, 1895, May, p. 333.)

Delay. Aged twenty-eight years; congenital inguinal hernia of both ovaries; patient had never menstruated. Uterus and vagina absent. Operation similar to herniotomy performed. Evidence of cystic degeneration. Microscope showed distinct traces of uterine and tubal tissue associated with the displaced ovaries. (*Lyon Méd.*, Jan. 17, 1904.)

Desault, in 1779, while dissecting the cadaver of a woman, aged fifty years, found a hernial sac in the inguinal region, containing the left ovary, tube, and uterus. (*Traité de Mal. Chir.*, Paris, 1779, vol. ii, p. 305.)

Diederich. Aged twenty-one years; genital malformation;

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no vagina; congenital inguinal hernia of the right side; operation; sac contained right ovary, tube, and a rudimentary uterus. They were removed. Recovery. (*Annales de la Soc. Belge de Chir.*, 1900, vol. viii, p. 240.)

R. Ferguson. Aged thirty-two years; left inguinal hernia first noticed at seven years of age; irreducible; operation. Sac was found to contain an ovary adherent to distal end of sac, and an imperfectly developed uterus, to which was attached a cystic body, apparently a degenerated ovary. The whole mass was excised and recovery followed. The author believed this to be primarily a congenital inguinal hernia of the left ovary, involving subsequently by traction the uterus and remaining ovary. (*Amer. Med.*, 1903, vol. vi, p. 518.)

Filippini reports a light inguinal hernia in an hermaphrodite, aged thirty years; the external appearance was that of a strong man; at operation the hernia was found to contain a normal uterus, two Fallopian tubes, a parovarium, and a small oval body which was believed to be an ovary, but which the microscope did not verify as such. This is the third case of the kind in surgical literature, where during an operation for inguinal hernia in a male a uterus was discovered in the inguinal canal. The first case was that of Böckel, in 1892, and the other that of Carle in 1897. (*Il Morgagni*, 1900, No. 12.)

Fischer. Aged forty-four years; inguinal hernia of the pregnant uterus; sixth month of eighth pregnancy; Cesarean section; mother died second day. Child lived. Patient had had acquired hernia in the right inguinal region ten years before marriage, which had always been neglected. (*Lond. and Edin. Med. Jour.*, 1842, vol. ii, p. 21.)

Hudson. Nine weeks old; right inguinal hernia; irreducible operation. Sac was opened and found to contain both ovaries, both Fallopian tubes, and the uterus. The organs were reduced, the fundus of the sac excised; the stump was fixed between the pillars of the ring, which were

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then sutured together. Recovery. (*The Medical Press and Circular*, August 21, 1895, p. 168.)

J. H. Jopson. Negress, aged twenty-seven years; irreducible right inguinal hernia, probably congenital; operation; sac was found to contain uterus, right ovary, tube, and broad ligament. The body of the uterus was necrotic and infected, hence it was removed with ovary. This was done after applying series of silk ligatures to the broad ligaments, tubes, and supravaginal portion of the uterus, which formed the pedicle, and adherent sac was also cut away. Recovery followed. (*Annals of Surgery*, 1904, vol. xl, p. 98.)

Kelly. Reports hernia of the left ovary, which entered the canal only partially; the left cornu of the uterus was anomalous and communicated with the inguinal canal, by what appeared to be a long round ligament. Besides the ovary, there was a fleshy nodule, resembling a rudimentary uterus, in the inguinal canal. The ovary was reduced and stitched to the sides of the ring, and recovery followed. Kelly speaks of a second case of ovarian hernia, also associated with congenital malformation. (*Kelly's Operative Gynecology*, vol. ii, p. 489.)

Klotz. Aged twenty-four years; true hermaphrodite; congenital hernia in inguinal region on both sides; the right tumor was operated on and removed; it was found to contain a cystic degenerated ovary with tube and a portion of a one-horned uterus; death due to hemorrhage. Autopsy showed the left tumor was a testicle with epididymis and tunica vaginalis propria. (Langenbeck's *Arch. f. klin. Chir.*, 1879, vol. xxiv, p. 454.)

Krug. Aged eighteen years; congenital inguinal hernia of uterus, left tube and ovary; a radical operation was done, and the patient died from cardiac failure on the fifteenth day. (*Amer. Jour. of Obstet.*, 1890, vol. xxiii, p. 606.)

Labadie, Lagrave, and Leguen. Report an inguinal hernial sac which contained the internal genitals; the uterus had a vertical length of 2 cm.; the tubes were obliterated;

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FIG. 1.—Ledesma's case. Inguinal hernia of the pregnant uterus, drawn as it appeared during operation, with fetus partly extracted.

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there was but one ovary. (*Traité Méd. Chir. de Gyn.*, second edition., Paris, 1901, p. 229.)

Lallement. Aged seventy-one years; died of a disease of the chest in 1799. An enormous tumor in the right groin (corresponding to the inguinal ring) was dissected; the right ovary, the tube, and the whole uterus were found in the hernial sac. (Deneux, *Recherches sur la Hernie de l'Ovaire*, 1813, p. 19.)

Lallement found a hernia of the uterus while dissecting the body of a woman, aged eighty-two years; the hernia had existed for forty years; was situated in the right groin; the skin yielded to it, so that it formed a pouch between the thighs. When dissected the sac was found to contain the uterus, Fallopian tubes, ovaries, portion of the vagina, part of the epiploon, and two cysts, probably hydatids. (*Bull. de la Fac. de Méd. de Paris*, 1816, vol. i, p. 1.)

Leopold Le Nouëne. Aged thirty-five years; congenital inguinal hernia. Celiotomy was performed. Sac was found to contain the uterus, ovaries, and tubes of both sides. The uterus was healthy, therefore reduced. The adnexa were suppurative, hence removed. Recovery. (*Gaz. de Gyn.*, 1903, vol. xviii, p. 337.)

Laurent. Aged four months; inguinal hernia of uterus and left ovary; irreducible. Operation: Sac contained left ovary and tube, and uterus; removal of left ovary and tube; reduction of uterus; recovery. (*Bull. Soc. Méd. Gand.*, 1900, vol. lxvii, p. 479.)

J. Ledesma. Aged twenty-four years; inguinal hernia of the pregnant uterus; eighth month of seventh pregnancy; hysterectomy was performed, but reduction was impossible after delivery, and the uterus was left on the exterior. Both mother and child were saved. Patient had had a right inguinal enterocele, which had appeared some time before marriage. (*Gaz. de Méd.*, 1840, p. 715.)

Leguen. Aged eighteen years; left congenital hernia; irreducible; operation. Sac was found to contain the uterus

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broad ligaments, Fallopian tubes and ovaries. They were reduced. Recovery. The vagina was imperforate. (*Bull. de la Soc. Anat. de Paris*, 1897, vol. xi, fifth série, p. 302.)

Leopold. Aged twenty-eight years; congenital inguinal hernia of the left uterine horn; excision of this part and of the left ovary. On dividing peritoneum, what was thought to be the ovary was found to be the fundus of the small uterus. From its outer pole arose the Fallopian tube, and from the inner pole the cord which had been felt before the operation, and which was found to be the round ligament. No mark of cervix or vaginal portion of uterus found. The ovary and tube were first cut away; the uterus was found to be two-horned; the left was cut off beyond a ligature. Recovery. (*Arch. f. Gyn.*, 1879, vol. xiv, p. 378.)

Magnanini. Female, aged two months; left inguinal hernia; hernia dated from fifteenth day of birth; operation; contents of sac: Left ovary and tube and uterus; upon employment of gentle traction the right ovary was also exposed. No further detail is given. (*Semana med.*, Buenos Ayres, 1903, vol. x, p. 732.)

Maschka. Aged thirty years; left congenital utero-tubo-ovarian hernia; never menstruated; treated for eye disease; death from poisoning; autopsy revealed the contents of the congenital hernial sac to be the left tube, ovary, and rudimentary uterus. Uterus bipartitis. (*Prag. Ujhrsschr.*, 1878, vol. xxxix, p. 21.)

Nassi. Aged thirty-six years. From infancy inguinal hernia. Operation: The hernial sac was found to contain the right ovary, tube, and one horn of a rudimentary uterus. The whole mass was excised and patient recovered. (*La Clinica Chirurgica*, July, 1897, No. 7, p. 295.)

Nunez Rossié. Aged twenty-eight years; left inguinal hernia; irreducible; operation. Sac contained ovary, tube, and horn of uterus; excision; recovery. (*Cron. Méd. Quir.*, Habana, 1885, voi. xi, p. 16.)

Ogé. Aged seventy-one years; acquired left inguinal

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hernia of the uterus, ovary, and Fallopian tube; irreducible; celiotomy; the uterus was reduced, tube and ovary removed. Recovery. ("Des Hernies de l'Uterus et des Annexes," *Thèse de Paris*, 1900, p. 47.)

Olshausen. Aged twenty-six years; double uterus. The left uterus and left ovary palpable in an inguinal hernia during pregnancy. Reduced without operation. (*Arch. f. Gyn.*, 1870, vol. i, p. 41.)

Perkins. Aged forty years; acquired inguinal labial hernia; irreducible; whole sac removed and found to contain left ovary, Fallopian tube and cornu of uterus; recovery. *Annals of Surgery*, 1895, vol. xxi, p. 691.)

Perondi. Aged seventeen years; right inguinal hernia; no uterus; hernia irreducible. Operation: Sac was excised and found to contain a rudimentary uterus, tube and right ovary. Recovery. (*Monats. f. Geb. u. Gyn.*, 1903, vol. xvii, p. 1097.)

Pfannenstiel reports two cases of ovarian herniæ preceded by intestinal herniæ. In one not only the ovary, but the uterus, the whole right adnexa and part of the left adnexa were contained in the sac. The organs were hyperemic and swollen, but nowhere adherent; the ligaments of the right side long and relaxed; those on the left side tightly drawn. (Veit's *Handbuch d. Gyn.*, 1898, vol. iii, p. 258.)

Nicolaus Pol, in 1531, appears to be the oldest recorded case of hernia of the pregnant uterus. It was a right inguinal hernia. Cesarean section was performed. Mother died the third day, and the child lived one year and a half. (Adams, *Amer. Jour. of Obstet.*, 1889, vol. xxii, p. 225.)

Rektorzik. Aged thirty-two years; acquired right inguinal hernia shortly after fifth confinement; the uterus became impregnated in the sac; right ovary also distinguished in the sac. Labor seemed impossible; development having taken place in one horn of a one-horned uterus outside the abdominal cavity. Cesarean section. Patient died. Infant saved. (*Monats. f. Geb.*, 1860, vol. xvi, p. 6.)

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Riedel. Multipara; left inguinal hernia of the pregnant uterus. Death. No operation. Woman gave birth to several children while in this condition; was almost due at term when she died from hemorrhage and cramps accompanied by gangrene and fecal fistula. (*Ztschr. f. Nat. u. Heilk.*, 1823, vol. iii, p. 215.)

Rosanoff. Aged forty-five years; acquired right inguinal hernia of the pregnant uterus; fetus was extracted stillborn; three months later the hernia was cured by radical operation, the adnexæ on one side were also removed, being adherent to the sac. Recovery. (*Annales de Gyn. et d'Obstet.*, September, 1894, p. 210.)

Rouffart. Aged twenty-two years; never menstruated; irreducible inguinal hernia; operation. The sac was isolated and then opened. It contained a rudimentary uterus, the left ovary, and the left tube. These organs were resected, the sac was sutured and recovery ensued. (*Bull. de la Soc. Belge de Gynec. et d'Obstét.*, 1900, vol. xi, p. 76.)

Roux. Aged thirty-six years; congenital inguinal hernia on both sides; absence of vagina. Operation: Tubes and ovaries were found floating between the intestinal loops and the anterior abdominal wall, in the prolongation of the inguinal canal. The two herniæ were found to contain two halves of the uterus (congenital deformity). These were excised. Later an artificial vagina was created. Recovery. (*Cong. de Chirurgie*, 1881, vol. v, p. 497.)

Scanzoni. Aged thirty-nine years; menstruated for the first time at twenty-one; after a fall, hernia the size of a walnut appeared in the left groin; irreducible; always swelled at menstrual epochs; tumor enlarged to the size of a man's head; uterus was found to have entered the sac; pregnancy supervened; uterine souffle could be heard in the tumor; labor was induced; dead fetus and placenta were expelled. Following day, after-pains were felt in the tumor. Recovery. Tumor was reduced and less painful. (*Scanzoni's Beit.*, 1873, Band vii.)

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Schwartz records an inguinal hernia of a deformed uterus in a patient aged twenty-five years; the vagina was absent. She had two inguinal hernias, irreducible; the masses were hard, elongated, and in front of them the intestine and epiploon had descended; radical cure was performed in two seances. On both sides was found a thick muscular and erectile cord. On the right, besides, was the tube, and farther on the ovary, and from the anterior angle the round ligament proceeded; it was, therefore, a uterine horn which had remained independent. (*Annales de Gyn.*, 1892, vol. xxxvii, p. 344.)

Sennert. Left inguinal hernia of the pregnant uterus, acquired during early pregnancy; during labor at term. Cesarean section; patient died; the child was saved. It was found impossible, even after operation, to reduce the uterus. (*Mém. de l'Acad. Roy. de Chirurg.*, vol. xi, p. 231.)

Skrivan. Aged thirty-eight years; left inguinal hernia from childhood; finally the uterus entered the hernial sac; patient became pregnant for the eighth time; three months after movements were first felt; labor pains began. Cesarean section was performed; mother recovered; infant lived one hour. (Adams, *Amer. Jour. of Obstet.*, 1889, vol. xxii, p. 229.)

Heywood Smith. Aged twenty-three years; double inguinal hernia; acquired; tumors irreducible. Operation: Sac containing right ovary and tube removed. Left side, uterus, ovary, and oviduct were contained in sac. They were removed. After an attack of peritonitis, patient recovered. (*Brit. Gyn. Jour.*, 1885, 1886, vol. i, p. 321.)

Stoneham. Aged nine years; operation for radical cure of right oblique inguinal hernial sac was found to contain uterus with a broad ligament, and also two organs properly placed for ovaries, and what seemed to be Fallopian tubes. The sac was sewed up and the contents returned into abdomen. Death. Autopsy revealed this child to have a perfect uterus masculinus with perfect Fallopian tubes and testes in broad ligament. Both penis and vagina existed. Case believed

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to be one of complex or vertical hermaphroditism. (*Trans. Path. Soc. of Lond.*, 1888, vol. xxxix, p. 219.)

Werth. Aged twenty-two years; never had menstruated; no trace of uterus or adnexa discovered; swellings in inguinal canal on both sides; they were removed and proved to be the ovaries. The hernial sac contained also the pavilions of the Fallopian tube, and a pedicle which appeared to be the extremity of the horn of a rudimentary uterus bicornis. Recovery. (*Arch. f. Gyn.*, 1877, vol. xiii, p. 132.)

Widerstein. Aged thirty-four years; left congenital inguinal tumor; it enlarged, exploratory puncture gave issue to six ounces of watery liquid, and eight ounces of blood; then an incision was made and a fetus of four months, with placenta, was extracted; seventeen days later recovery was complete, but a small tumor still persisted in the left groin, which was diagnosed as the ovary. (Schmidt's *Jahr.*, 1853, No. 10, p. 58.)

Winckel. Aged thirty-six years; patient was gravid (at the fifth month); in the right cornu of a uterus bicornis. Patient had double inguinal hernia since the birth of first child; at the third month, under influence of strong intra-abdominal pressure, the uterine horn was also forced into the inguinal ring. Irreducible. Operation: Laparo-hysterectomy. The uterine horn consisted of right ovary, tube, and portions of the round and broad ligaments. Recovery. In the right ovary was found the corpus luteum. (*Arch. f. Gyn.*, 1885, vol. xxvi, p. 3.)

A critical analysis of the cases of inguinal hernia shows the following facts: There have been 50 cases of inguinal hernia of the uterus recorded. Of these, 20 were on the right side and 20 on the left. There were 6 double and in 4 cases the side was not mentioned.

In 7 of the cases on the right side the uterus was pregnant, and in 6 on the left side.

In 37 cases the uterus was not pregnant; 30 were operated upon (one of these being reduction by taxis), with the follow-

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ing results: recovery, 22; death, 3; not stated, 5; total, 30. No operation (outcome not stated), 1; whether autopsy or operation not stated, 2; found postmortem, 4; total 37. The ages ranged from seven weeks to eighty-two years.

The results in the 13 pregnant cases follow:

Operations: 7 Cesarean sections, with 3 recoveries (5 of the children lived). 1 extraction of four months' fetus by section; recovery. 1 laparohysterectomy at fifth month; recovery. 2 reductions by taxis, with recoveries. Results to children not stated. 1 death without operation. 1 neither operation nor result mentioned. These facts tabulated show: Mothers: recoveries, 7; deaths with operation, 4; without operation, 1; not stated, 1; total, 13. Children: Cesarean section—lived, 5; died, 2. Extracted before viability, 2; death in utero, 1; results not stated, 3; total 13. The ages ranged from nineteen to forty-five years.

In a large number of the cases, viz., 25, there was congenital malformation. In 5 of these there was hermaphroditism. The other deformities were rudimentary uterus, bicornate uterus, etc. Double uterine hernia could only occur with a malformed uterus.

Of the remaining 25 cases it may be said that probably a number were also malformed. I judge this to be true, because in several cases no operation was performed, and in most of the others the operations were such as not to lead to a careful examination of the whole genital tract. Herniotomy, by reason of its limited field, and Cesarean section performed upon an organ within a hernia may fail to reveal very important abnormalities of the parts not within the sac.

Although it is probable that many of these cases are acquired in the sense that the uterus entered the sac at some period after birth, nevertheless a perusal of the cases convinces one that almost all of the herniæ were either congenital, or that the hernial rings were congenitally patent or weak, thus favoring hernia formation. Another point worthy of note is that the uterus is not ordinarily the first organ to

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enter the hernia. The womb evidently is usually held close to the ring by the adnexa, and forced into a sac already occupied by these organs. This is evidenced by the fact that in almost all right herniæ the right appendages are found with the uterus, and in left herniæ the left appendages are found. Another noteworthy observation is that there is but one case (Swartz) mentioned in these reports of the intestine or epiploon being present in the sacs. In three of the five femoral herniæ of the uterus and in the one ischiatic hernia, intestine or epiploon was found.

In inguinal herniæ of the ovary and of the tube, without the uterus, other organs are frequently found. I think that this may be explained in the cases showing malformation by the early period at which the ovary, tube, and sometimes the uterus entered the sac.

In the cases in which the uterus enters later in life the event probably happens at a moment when, owing to the posture of the patient, the ordinary contents of the sac have been reduced. The uterus then making efficient blockade of the inguinal ring prevents the entrance of intestine or omentum.

CASES OF FEMORAL HERNIA OF THE UTERUS.

Cloquet. Right crural hernia containing uterus, tubes, ovaries, a part of the vagina, and a piece of epiploon. Hernia had existed for forty years. Right ovary had changed to a cyst, and another cyst adhered to it. (*Pathologie Chir.*, 1831, p. 104.)

Cruveilhier. Reports a crural hernia found in the cadaver of an old woman in the hospital of the Salpêtrière, in the sac of which was found the uterus, on one side the ovary only, on the other the pavilion of the tube. (*Anatomie du corps humain*, 1835–42, vol. ii.)

Doringius. Left crural hernia dating from first labor; gradually increased; gravid uterus entered the sac in the

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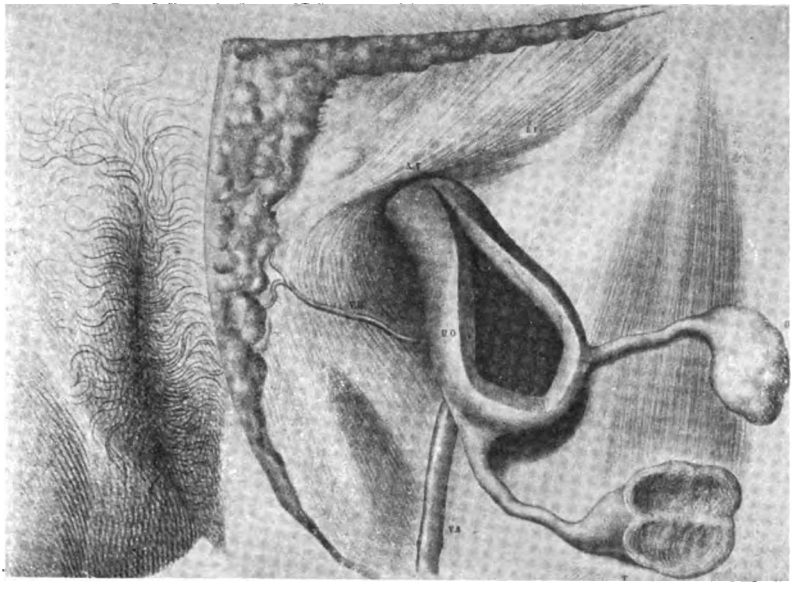

FIG. 2.—Cruveilhier's case. Autopsy. Uterus with tube of one side and ovary of the other in a femoral hernia.

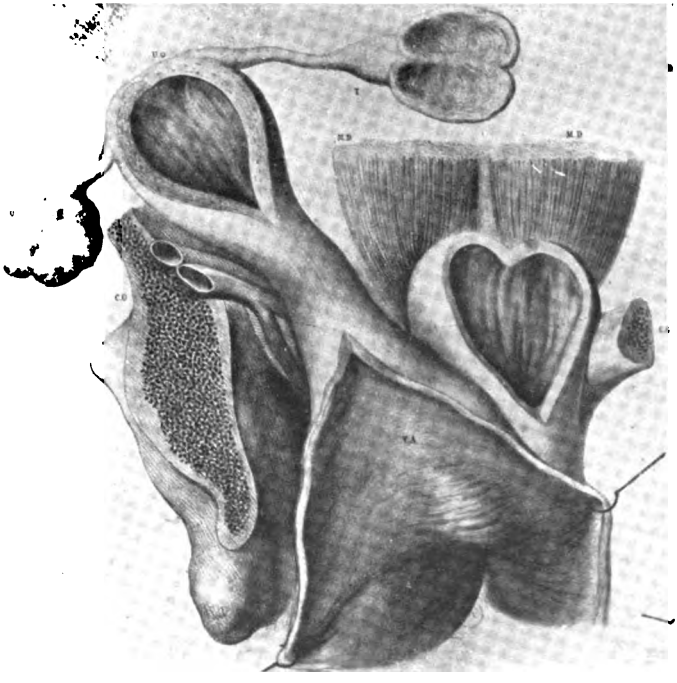

FIG. 3.—Same as Fig. 2. Further dissection viewed from behind.

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beginning of the ninth pregnancy; irreducible; Cesarean section was performed; infant lived; mother died three days later. (Sabatur, *Mém. de l'Acad. Roy. de Chirurg.*, vol. iii, p. 387, 1778.)

Hulke. Aged seventy years; femoral hernia of thirty years' standing (sometimes incarcerated, sometimes reducible); size of a billiard-ball. Operated during an acute strangulation after efforts at reduction by taxis. Death. Autopsy showed that taxis had torn the neck of the sac, so that the contents of the hernia had escaped into a newly formed cavity between the peritoneum and the body wall. Through an opening in the posterior wall opposite the left femoral ring eight feet of small intestine was protruding into the sac from the abdominal cavity. It was strangulated and inflamed. The uterus also was in the sac. (*Arch. f. klin. Chir.*, Band viii, S. 646. Original in *Medico-Chir. Trans.*, 1864, vol. xlvii.)

Murat. Aged eighty-two years; acquired right crural hernia when forty years of age, shortly after eighth labor; symptoms of strangulation induced the patient to enter the hospital of the Salpêtrière, in 1815; the enormous size of the tumor, the advanced age, and the bad state of the pulse contraindicated operation. Patient died soon after of adynamic fever. Autopsy revealed crural hernia, the sac containing the uterus, both tubes, ovaries, a portion of the vagina, and a considerable quantity of the epiploon. (*Dict. des Sci. Méd.*, 1819, vol. xxxix, p. 35.)

There are but 5 cases of femoral hernia of the uterus on record: Right side, 2; left side, 2; not stated, 1; total, 5.

In 1 case the uterus was pregnant. The mother died. The infant lived after Cesarean section. In 2 cases the condition was found postmortem. In the others, operations were performed. Cloquet failed to state the result. Hulke's case died. In 2 cases epiploon and in 1 intestine was present in the sacs. The patients were all old, except Doringius' pregnant case, and she was in her ninth pregnancy. Femoral

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hernia of the uterus is always acquired by the uterus being forced into the sac of an existing enterocele.

CASE OF ISCHIATIC HERNIA OF THE UTERUS.

Papen. Aged fifty years; right ovarian hernia, which was sciatic. Laparotomy; the intestines had prolapsed into the hernial sac, which ad passed through the sacrosciatic notch; uterus was also drawn into mouth of hernial sac, while the diseased right ovary and right tube lay inside the sac. (Haller, *Disputation Chirurg.*, 1755, vol. iii, 313.)

Papen's case is unique. There are no obturator herniæ of the uterus.

- Hernia of uterus, 76 cases.
  - Inguinal, 50.
    - Right, 20.
      - Non-pregnant (malformed, 5), 12.
      - Pregnant (malformed, 2), 8.
    - Left, 20.
      - Non-pregnant (malformed, 8), 15.
      - Pregnant (malformed, 2), 5.
    - Double, 6. Pregnancy, none (malformed, 6).
    - Not stated, 4. Pregnancy, none (malformed, 2).

    (Right, Left, Double, Not stated: Malformed, 25.)
  - Femoral, 5.
    - Right, 2. Non-pregnant.
    - Left, 2.
      - Non-pregnant, 1.
      - Pregnant, 1.
    - Not stated. Non-pregnant, 1.
  - Obturator, 0.
  - Ischiatic. Right. Non-pregnant, 1.
  - Umbilical, 8.
  - Ventral, 16.

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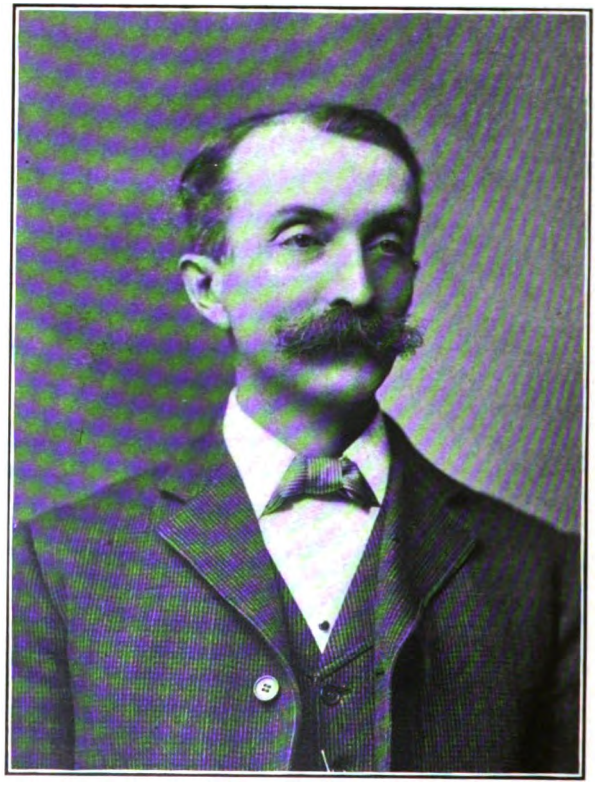

Archer W. Johnstone

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IN MEMORIAM.

ARTHUR WEIR JOHNSTONE, M.D.
(1853–1895)

By Howard A. Kelly, M.D.

Dr. Arthur Weir Johnstone, our distinguished fellow member, whose recent death is such a loss to our profession, was born at Paint Lick, near Danville, Kentucky, July 15, 1853. His father was the Rev. Alexander Johnstone, a minister of the Presbyterian Church, well known as a man of extreme Calvinistic views, and a strong upholder of antislavery principles; he received his education for the ministry at Danville, Kentucky, where he also met his future wife, a Miss Green. They were married soon after he entered the ministry and had three children, of whom Arthur, the youngest, was the only son.

Arthur's early education was received at the public schools. He then entered Center College, Danville, where he graduated in 1872. After leaving college he joined a corps of U. S. engineers, which was employed on a triangulation of a portion of the Mississippi.

He began the study of medicine, according to the custom of the day, in the office of Dr. John B. Jackson, of Danville, a man with a high reputation for learning, who died at the early age of forty-two. Johnstone next attended one course of lectures at Tulane University, in 1873, and then entered the University of New York, where he graduated in 1876. After his graduation he went into partnership in Danville with Dr. A. R. McKee, a well-established practitioner. This arrangement lasted but a short time, when Johnstone returned to New York to study for three months in Charles Heitzman's laboratory,

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while taking a course in diseases of the eye with Knapp in his clinic, as well.

He now returned to a country practice, but again only for a short time. His strong inclination had always led him toward surgery, and becoming interested in gynecology, which was at that time rapidly advancing along bold surgical lines, he determined to pursue this as a specialty. To this end he wrote to Lawson Tait, at Birmingham, England, asking him whether he would receive him as a pupil, and on what terms. It happened that Tait was, at that time, prejudiced against Americans, and on receiving Johnstone's letter, he remarked to Greig Smith, who was with him, that he should make his fee so large that it would be prohibitive. He wrote Johnstone, therefore, that his terms were $2000 for a year. To his surprise, Johnstone at once accepted. A personal acquaintance with Johnstone soon sufficed to obliterate all prejudice and antipathy on Tait's part, and he often subsequently referred to Johnstone as his most promising pupil. Johnstone remained with Tait six months, during which time his paper on "Menstruation," which attracted a great deal of attention, was read before the British Gynecological Society, then established in Birmingham. At the end of the six months, when Johnstone returned to the United States, he insisted, with characteristic open-handedness, on paying Tait the full fee for the year. He always reverted with great enthusiasm to this apprenticeship, and had a fund of anecdotes about Tait and their experiences when making peripatetic surgical trips through the country, with which he loved to regale their joint friends.

On Johnstone's return he settled once more in Danville, where he started a private hospital, with the intention of building up an exclusively gynecological practice; in this purpose he was eminently successful, and he soon secured patients from all parts of the State. He was, I believe, the first person in Kentucky during this period to operate for extrauterine pregnancy, after making a diagnosis. It was about this time (1886) that he joined the American Gynecological Society, then in its infancy.

About three years later Johnstone formed a partnership with that eminent and much-loved old warrior in the surgical world, Dr. Thaddeus Reamy, of Cincinnati. This association, however, was not a happy one and lasted but a year; after its

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termination, he opened another private hospital of his own in Cincinnati, near Mt. Auburn. At a later date he purchased the old homestead belonging to the late Governor Hoadley, on the Madison Road, and this he used both as a hospital and a residence until his death.

In 1897, Dr. Johnstone married the accomplished Miss Ethel Chamberlin, a daughter of Major W. H. Chamberlin, for some time connected with the Associated Press. Mrs. Johnstone's especial talents lay in the direction of music.

In the latter part of last September (1905) Dr. Johnstone was taken ill with what he himself at first supposed was a simple attack of colic; Dr. B. R. Rachford and Dr. Marion Whitacre, however, who were immediately called in, made a diagnosis of appendicitis of a severe character. The following morning Dr. W. D. Porter and Dr. R. B. Hall were called in consultation and an immediate operation was advised. Mrs. Johnstone telephoned to Dr. E. C. Dudley, of Chicago, begging him to come and operate. Dr. Dudley operated on September 16; on opening the abdominal cavity he remarked that the case was the most desperate one he had seen in a long experience. The operation was immediately successful, nevertheless, and Dr. Dudley started on his return for Chicago. During the ensuing night, however, complications arose, and Dr. Dudley had no sooner reached home than he had to hasten back again. Upon reopening the abdomen an intestinal obstruction was found with an acute peritonitis, which made the condition hopeless, and Dr. Johnstone survived this operation only two hours, conscious almost to the last, and assuring those around him that the operation had given him his one chance of recovery.

The funeral services were conducted from his home, on Saturday, September 30, by the Rev. Charles Goss, of the Avondale Presbyterian Church, and the Rev. Thomas Knox, of the Seventh Presbyterian Church. The pallbearers were Drs. W. B. Porter, B. R. Rachford, J. W. Stevens, Marion Feley, M. McClure, and Mr. W. C. Lemmon. The mortal remains of our friend and Fellow, Dr. Johnstone, rest in the beautiful Spring Grove Cemetery, just outside Cincinnati.

Dr. Johnstone was loved by many friends and a touching feature of his funeral services was the grief of the persons in his employ, some of whom had worked for him many years. One of these was an old negro named Ned, who had lived with

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Dr. Johnstone's father; he had known Dr. Johnstone all his life, and had served as orderly ever since the establishment of his hospital.

Dr. Johnstone was always a student and an investigator and his eagerness was both attractive and contagious. Each year saw him seeking fresh knowledge in various schools and post-graduate courses.

He manifested especially the quality of faithfulness in dealing with difficult and protracted cases.

He had high ideals both personal and professional and looked upon life as a precious opportunity for service.

The following is a list of some of his contributions to medical literature:

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The Function and Pathology of the Reticular Tissue. Amer. Gyn. and Obstet. Jour., 1896, ix.

The Endometrium in the Cycle of the Rut. Read before the Brit. Gyn. Soc., 1889.

Menstruation: Its Necessity and Purpose.

Comparative Zoölogy of Menstruation.

Clinical Importance of the Menstrual Wave.

Autointoxication from Defective Menstruation.

Pathological Aspects of Stevenson's Wave.

Internal Secretion of the Ovary.

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The Infantile Uterus.

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R Stansbury Sutton

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R. STANSBURY SUTTON, M.D., LL.D.
(1841–1906)

By Joseph Taber Johnson, M.D.

It is with a profound sense of sorrow and personal loss that we chronicle the death of our highly esteemed friend and Fellow, Dr. Rhoades Stansbury Sutton, which occurred on April 21, 1906. Dr. Sutton had not been in good health for some months, but with his usual cheerfulness and unselfishness had continued to perform his laborious and exacting professional duties with his accustomed enthusiastic zeal.

While in a street car in Pittsburgh, on his way to visit a patient, he was prostrated with heart failure and sank to the floor of the car, and though lifted by willing and loving hands and laid tenderly on the seat, his heart ceased to beat. He died before any medical aid could reach him, and, as the car stopped in passing the hospital to which he was going, his inanimate form was carried into the building where his great skill had so often brought life and health to others. Dr. Sutton was born in Indiana, Pennsylvania, sixty-five years ago. He studied medicine in Philadelphia and graduated with honor from the University of Pennsylvania in the class of 1865. He soon settled in Pittsburgh, where he practised his profession with great success up to the day of his death. He had his wish, to die with his harness on, and not to linger long with a distressing illness, a burden to himself and an anxiety to his friends.

He was happily married and was a devoted father and a most useful neighbor and friend. Though a successful general surgeon he was among the first of his confrères to adopt the specialty of gynecology and abdominal surgery. He was actually a pioneer in this work and fitted himself more particularly for its delicate and responsible duties by special studies and training in our own

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large cities and by instruction in the clinics and hospitals abroad, to which he frequently returned for new ideas and a study of their especial technique.

At the Buffalo meeting of our Society, in 1905, Dr. Sutton was appointed by the President a delegate to the Madrid International Congress of Gynecology.

In order to more successfully conduct the special work to which he had dedicated his talents, he established, in 1883, one of the first private hospitals in the country, and devoted it to gynecology and abdominal surgery. He named it the Terrace Bank Hospital for Women, and conducted it for twenty years. During the recent Spanish war his ardent patriotism led him to offer his services to the government and he was appointed Chief Surgeon to the Second Brigade, Third Division of the First Army Corps.

Dr. Sutton was a frequent contributor to medical journals and societies and was the author of a book on *Abdominal Surgery*, which was chiefly a history of his own special work. He was twice elected Vice-President of our Society. He served as President of the American Academy of Medicine and also of the Mississippi Valley Medical Association, and the Pittsburgh Obstetrical and Gynecological Society. In 1884 he was elected Chairman of the Obstetrical and Gynecological Section of the American Medical Association. He was also a member of the British Medical and Gynecological Associations.

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AUGUSTUS PALMER DUDLEY, M.D.
(1853–1905)

By Seth C. Gordon, LL.D., M.D.

The subject of this sketch was born at Phippsburg, Maine, July 4, 1853. His father, Palmer Dudley, and his mother, Francis Jane (Wyman) Dudley, were natives of Maine. While a young lad his parents moved to Bath, Maine, where he received his education in the city schools, primary, grammar, and high schools, taking only the English course in the latter. Soon after leaving school at Bath his parents moved to Portland and young Dudley became an apprentice to the Portland Company, manufacturers of all kinds of iron and steel machinery. He served his apprenticeship faithfully and when he left there "he could (to use his own words) build and run a locomotive, make a needle or a pen-knife." There is no doubt that much of his skill as an operator came from training in these machine works. His familiarity with tools of all kinds gave him wonderful deftness in the use of surgical instruments. While yet an apprentice in the Portland Company he had other aspirations and ambitions to the extent of reading and reciting in anatomy at irregular intervals in the office of his life-long friend, Dr. B. B. Foster. At the close of his service in the machine works he fully determined to make the profession of medicine his life-work, and to that end entered the office of the writer as a regular student. For the first six months he pursued the study of Latin and physics under a private tutor, at the same time keeping up his study in anatomy and chemistry. He was always ready to do anything in line of his professional work, and at one time took the position of night nurse at the Maine General Hospital, and improved

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all opportunities of seeing clinical work at the hospital and with surgeons in private practice. Although an undergraduate he was elected house surgeon at the Maine General Hospital, to fill a vacancy.

He took his first course of lectures at the Maine Medical School, where he was, for a time, demonstrator of anatomy. He graduated at Dartmouth Medical School in 1877, and immediately commenced practice in Portland, where he remained until 1881, when his ambition led him to go to the Woman's Hospital in New York, where he remained as an interne for a year and a half. From there he went to San Francisco, California, as assistant surgeon in the State Woman's Hospital, returning to New York in 1884. The history of his professional life in New York is full of interest. Almost alone and unaided he made it a great success. He conquered by his industry and skill many difficult problems in surgery and medicine. He was appointed instructor in diseases of women at the Post-graduate Medical School in 1887, and visiting gynecologist to Randall's Island Hospital and Northeastern Dispensary. Was afterward made full professor of gynecology and surgeon at the Post-graduate Medical School and surgeon to the Harlem Hospital.

He was also professor of diseases of women at the University of Vermont, and later professor of gynecology at Dartmouth Medical School, which position he held at the time of his death. As an instructor he had few equals and less superiors. He won the love and esteem of his pupils and indeed of all young men of the profession, to whom in many instances he became a strong friend. Dr. Dudley was a close student and kept in touch with all progress in his profession. He wrote very many valuable papers for publication. Some of them being translated for foreign medical journals. Nearly all this literary work was original investigation and a *résumé* of his clinical teaching. Among the most important papers are "Vaginal Hysterectomy in America;" "A New Method for Restoration of Lacerated Perineum;" "A New Method for Treating Certain Forms of Displacements." His most prominent papers were upon the "Conservative Treatment of the Uterine Appendages." It is not too much to say that he did as much of this kind of work

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as anyone either in America or abroad. He received due acknowledgment from many sources.

Dr. Dudley was twice married. In July, 1884, he married Susie Stephens, daughter of Jesse Mason, of Victoria, B. C., who died three years later of consumption, leaving no children. In 1891 he married Cassandra Coon, daughter of W. J. Adams, of San Francisco, Cal., who, with two daughters by this marriage, survive him. He was a most devoted husband and father. His success as a surgeon in New York was assured from the first of his residence there. As an operator he had few superiors. He made friends readily, and bound them to himself "with hooks of steel," for he was a strong and loving friend himself.

He was a member of the American Medical Association, Fellow of the American Gynecological Society, British Gynecological Society, Maine Medical Association, New York State Medical Association, New York Academy of Medicine, New York Obstetrical Society, and an active member of the International Congress of Obstetrics and Gynecology. He did much for this latter organization, being the American secretary. He had held important official positions in nearly all of the Medical Societies with which he was connected, and invariably discharged the duties with great credit to himself. In politics, a Democrat; in religion, an Episcopalian. For the past year it had been evident that he was failing in health, which was very marked early in June last. An examination showed tuberculosis. This decided him to go to Switzerland mountains, hoping much from the sea voyage and the altitude of Davos Platz. He sailed from New York on July 5, and died in Liverpool, England, July 15. The remains were brought to Portland, Maine, where he was buried by the side of his father and mother.

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James R. Chadwick

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JAMES READ CHADWICK, M.D.
(1844–1905)

By W. L. Burrage, M.D.

The sudden death of Dr. Chadwick was a great shock to his many friends. He was found dead outside his summer residence at Chocorua, N. H., on the morning of September 23, 1905. On going to bed the previous evening he appeared to be in his usual health. It is supposed that he was taken ill during the night and went to the dangerous narrow balcony outside his bed-room in the second story for air, stumbled and fell over the low railing to the ground below, striking on a Japanese stone ornament in his descent, as attested by bruises found on his head and side. In his hands were portions of the vines which he had clutched as he fell. The medical examiner gave it as his opinion that death was accidental and was due to abdominal hemorrhage caused by the fall.

James Read Chadwick was born in Boston, November 2, 1844. He was the son of the late Christopher Chadwick, a Boston merchant, who married a daughter of the late James Read, of the same city. He was educated in the Boston schools and at Harvard College, where he was graduated with the class of 1865. After an extended trip abroad he entered the Harvard Medical School and took his degree in medicine from that institution in 1871. In this year he married Katherine M. Lyman, daughter of the late Dr. George H. Lyman, one of the pioneers in gynecology in Boston and a founder of this society.

Dr. Chadwick took his wife to Europe and for a period of two years pursued his medical studies in Berlin, Vienna, Paris, and London, giving more particular attention to the study of the diseases of women and mastering the technique of the great

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masters of the Continental centres. On his return to Boston, in 1873, he built the residence at No. 270 Clarendon Street, which was his home during his lifetime.

One of the chief interests which engaged the attention of the young practitioner of medicine in the seventies was the advancement of the new specialty, gynecology. He conceived the idea of forming the American Gynecological Society, and was the moving spirit in the selection of the men who were to compose it. At the foundation of the Society, in 1876, he became its secretary, and he it was who was instrumental in steering a true course during the early years of its existence, often exhibiting rare judgment and tact in harmonizing inevitable differences; always keeping to able men and high aims and opposing self-seeking and medical politics. How much the success of the Society has been due to our first secretary only those who were associated with him in those first years can appreciate. His interest in its welfare never lessened, and, even after 1897, when he was our president, he continued to exercsie a directing influence in the Society's affairs.

From 1875 to 1882 Dr. Chadwick was physician to out-patients in the Gynecological Department of the Boston City Hospital. For many years he conducted a private dispensary for the treatment of the diseases of women, and here he gave instruction to the students of the Harvard Medical School, instilling into his pupils that independence of judgment and individuality which were so characteristic of the instructor. To young men and to young women entering the medical profession he was most generous of his time, of his advice, and also of material aid.

Another life interest of Dr. Chadwick was medical libraries. An ardent booklover, an omniverous reader, he believed that the library is the heart of our system of education. Here the deductions drawn in lecture-room, laboratory, and hospital are recorded. Here we collect the treasures of the past, the findings of the great teachers, and year after year store on the shelves the records of science in the process of evolution and add the new contributions of the present. The formation of the Boston Medical Library, in 1875, was brought about by the inspiration of Dr. Chadwick. It was his buoyant optimism, his contagious enthusiasm, which interested in the Library, Oliver Wendell

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Holmes, and scores of less-noted members of our profession. Dr. Holmes spoke of him as the untiring, imperturbable, tenacious, irrepressible, all-subduing agitator, who gave no sleep to his eyes, no slumber to his eyelids, until he had gained his ends, who neither rested nor let rest until the success of his project was assured. These were the traits which characterized the man during the thirty years of his librarianship. Goethe's "*Ohne Hast Aber Ohne Rast*," from the motto of the American Gynecological Society, was his favorite quotation. His want book was his constant companion on his frequent journeys, and many is the librarian and book collector who has contributed of his store to complete the files of the Boston Medical Library, and in like measure the duplicates of the library were always at the disposal of others. He established friendly relations with most of the medical libraries of the country and his gifts of books and periodicals, which far exceeded in number the receipts, assisted materially in the formation of more than one library. The manual labor alone which he expended in the sorting and disposal of duplicates represented many hours a day, including holidays and Sundays for years of his life. The present handsome building of the Library was the result of his initiative and never-ceasing agitation. No discouragement or reverse on account of lack of interest or financial panics turned him from his purpose. He not only worked himself but he incited others to work.

Another life interest of Dr. Chadwick was cremation. He was called the "Father of Cremation in New England" because he was instrumental in reorganizing and putting on a successful basis, in 1892, the decadent New England Cremation Society, founded in 1885. Dr. Chadwick was clerk of the Massachusetts Cremation Society, which built its crematory and beautiful chapel at Forest Hills Cemetery in 1893. In later years he was president of the society. He did much to popularize cremation and to render this means of disposing of the dead practical and dignified. As a result of agitation and the development of public opinion another crematory was established some ten years later at Boston's other chief cemetery, Mt. Auburn, and in 1905, Boston stood third among the cities of the United States in the number of cremations, being exceeded only by New York and

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San Francisco. It was peculiarly fitting that Dr. Chadwick's funeral should have been held in the chapel of the crematory at Forest Hills.

The subject of this sketch was a ready writer, as a perusal of the appended bibliography will show. His researches in the anatomy and physiology of the rectum contributed new facts to the knowledge of the time, and they have been quoted extensively in treatises and text-books on gynecology.

On his return from abroad he translated Winckel's work on "Puerperal Fever," part of his time having been spent at the author's clinic in Dresden. On a later trip to the Continent of Europe he picked up a rare pamphlet by Schoepff, a surgeon in the German contingent during our Revolutionary War, on the "Climate and Diseases of America." This he translated and edited, an incident characteristic of his keenness as a collector and bibliographer.

A finished public speaker, he made numerous addresses in various parts of the country on the subjects of medical libraries and cremation. As a debater he was no mean controversialist, when on ground which he thought to be firm. He used to say that it was an easy matter to agree with anyone but a difficult problem to maintain the opposite.

It was his gift to see where the community might benefit by the organization of some helpful project, some humanitarian enterprise, and his was the genius to bring it to a successful fruition. In 1890 he organized the Harvard Medical Alumni Association, and was its president for the first four years of its existence, always afterward retaining a lively interest in the well-being of the association. As a member and as president of the Obstetrical Society of Boston, Dr. Chadwick did much to advance the cause of gynecology and obstetrics in his native city. *The Harvard Graduates' Magazine* was another of his interests, he being vice-president of the Association at the time of his death.

Dr. Chadwick was a devoted admirer and friend of Oliver Wendell Holmes, and made a considerable collection of early editions of his writings and of souvenirs of the man, which he presented later to his beloved medical library. Among his close friends he numbered such men as Drs. Osler, Weir Mitchell, J. S. Billings, and William James. He was a delightful host,

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a clever conversationalist, generous to a fault, and, on account of a certain spontaneity, seemed younger than his years. Bohemian in tastes and unconventional, though always particular in dress, his flowing neckties and commanding presence made him a noticeable figure on the street and in the law courts where in later years he spent much time testifying as an expert in gynecology. He was a member of the Papyrus, St. Botolph, and Thursday Clubs, where he came in contact with the leading professional men of the city and the country.

His temperament was that of the poet and the artist. He looked beyond the present to the ideal. In him we saw a rare combination of versatility and constancy of purpose.

Broad-minded and singularly free from narrow prejudices he could see in acquaintance or friend those qualities which make for distinction, ignoring the lesser discordant notes, and he was ever ready to give a hearty welcome to a new thought, a progressive idea, or a fresh purpose no matter whence it came.

It is small wonder that Dr. Chadwick was beloved by patients and friends. His sense of humor, light-heartedness, and good fellowship were perennial. He was always the same, truly self-forgetful, always bright and cheery, and always with a new story or an old quotation to lighten the labors of the day. His genial presence will long be missed among us. He is survived by three daughters and a son.

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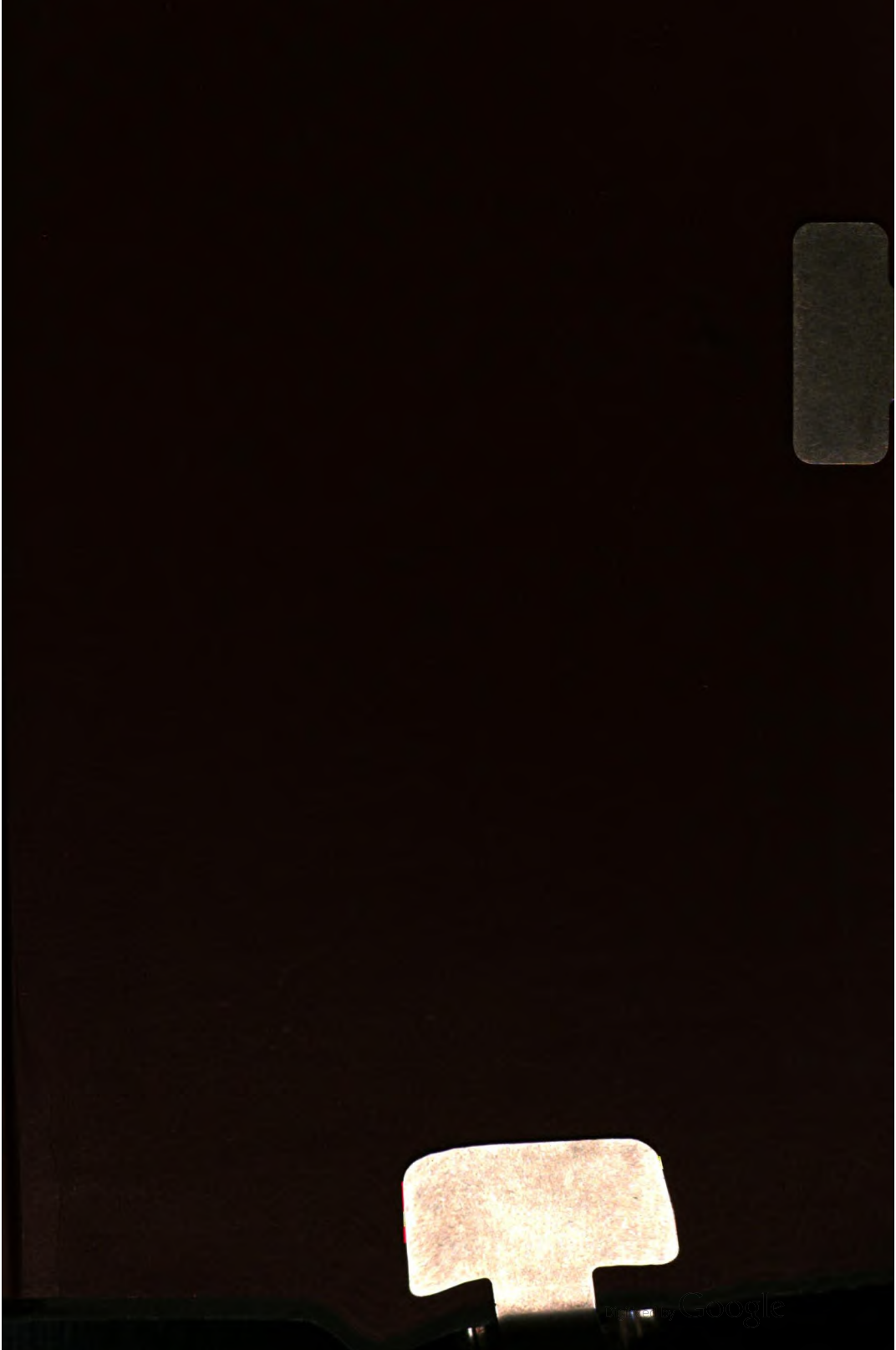
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